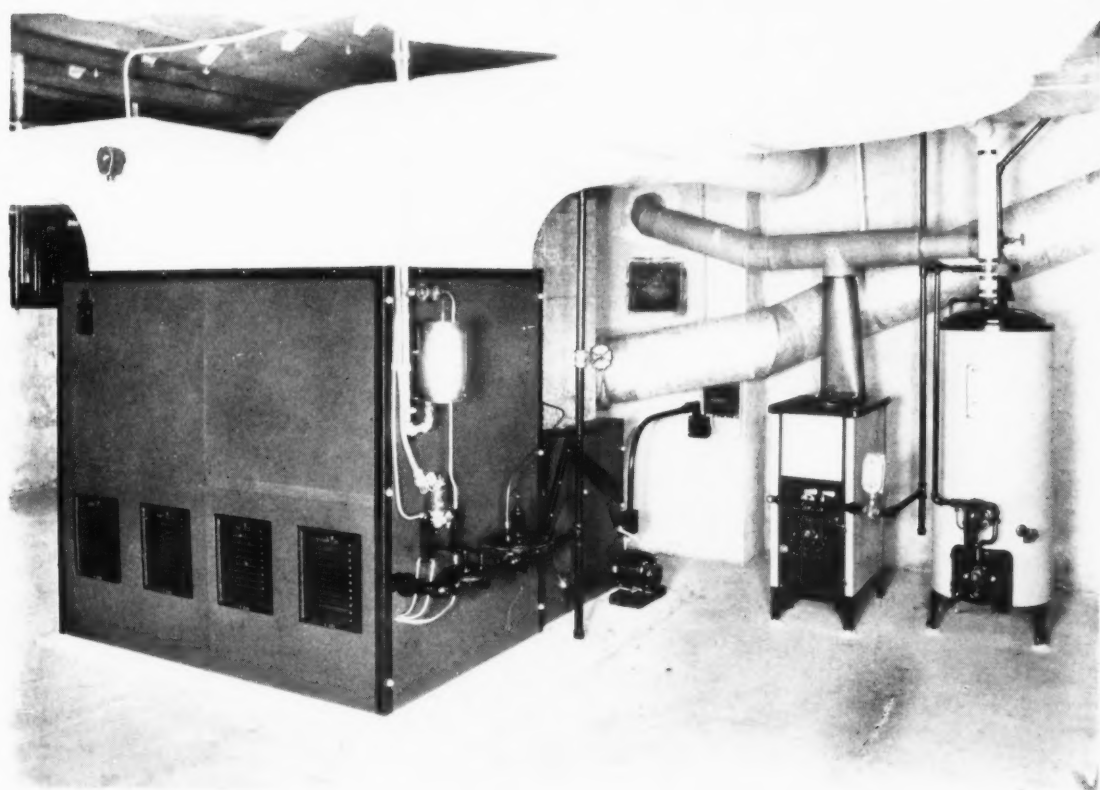


# American Artisan

THE WARM AIR HEATING  
AND SHEET METAL JOURNAL  
FOUNDED 1880



The photograph shows the type of basement equipment possible when automatic heating and automatically operated auxiliary units are used. In this particular installation the gas-fired furnace supplies heat for a designed mechanical system. The storage water heater operates without attention and the gas-burning incinerator is always ready for use. The system has numerous interesting details. A full description will be found within this issue

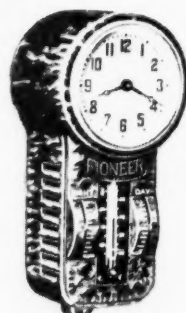
NOVEMBER 9, 1931

*furnace draft is open*

# When Signal Light Glowes Red

Normally, of course, every room in the house is uniformly comfortable but tonight there is a bitter wind from an unusual direction and the cozy corner by the reading lamp seems a bit chilly. No need to go to the basement to see if the furnace draft is open. If the signal light glows red the draft is open—if not, the draft is closed. It is quite convenient also, when the draft has been open for some time and still not much heat coming, to know that the furnace needs more fuel. Without this signal satisfactory automatic heat regulation is not possible.

Developments of this character are cutting down sales resistance for PIONEER dealers, increasing their furnace sales, and building up for them a very desirable and profitable heat regulator business.



## **PIONEER** HEAT REGULATOR

An enlarged sales organization and greatly increased manufacturing facilities now guarantee excellent dealer service everywhere. Write for details.

**PIONEER HEAT REGULATOR CORPORATION**

*Mfrs. of temperature controls for all types of heating plants.*

**DAYTON, OHIO**

*Division of the Master Electric Co.*

Q

a



N  
ST

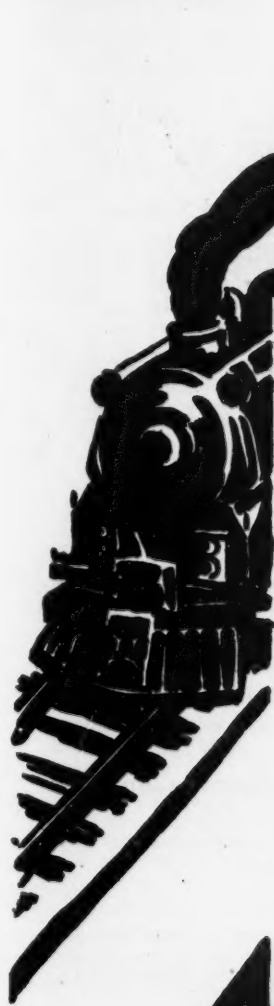
662  
INDEX P

2





# Combine shipments and save money



**T**HE price you pay for any merchandise includes both manufacturing cost and transportation cost. If, by carefully choosing your source of supply, you can save money on one or both of these factors, you are following the precedent of the most progressive business leaders of the day. This applies especially to stove and furnace repair parts—parts on which Northwestern can save you money.

By combining all your stove and furnace parts requirements in one order, you save time, freight, drayage and bookkeeping. Your shipment is made from Chicago, the greatest railway center on this continent, where freight is handled with the least delay.

You get prompt deliveries and furthermore, you get parts that are guaranteed to fit.

The largest stock of stove and furnace parts to be found anywhere in this country is carried for you by Northwestern.

Write for Catalog and Order Book.

## NORTHWESTERN STOVE REPAIR COMPANY

662 WEST ROOSEVELT ROAD • CHICAGO

Founded 1880

# American Artisan

THE WARM AIR HEATING  
AND SHEET METAL JOURNALCovering All Activities  
INGravity Warm Air Heating  
Forced Warm Air Heating  
Sheet Metal Contracting  
Air Conditioning  
Industrial Roofing  
Merchandising  
Ventilating

Platte Overton has frequently declared that piping systems can be designed so that dampers are not necessary. In order to explain just how this is done, he gives us in this issue the first of two articles showing the charts and tables to be used for laying out the ducts. Your questions or comments on this article are invited.

\* \* \*

The leading article in this issue tells about Walter Goetz, a Missouri contractor, who uses his own furnace for a demonstration system. He relates remarkable results from this practice. He explains how he proves new products by placing them in this system and how even manufacturer's salesmen bring prospects to look the system over.

\* \* \*

There seems to be a feeling that home owners won't stand the cost of a gas-fired heater burning manufactured gas. That owners who want automatic heating will pay the price is proved by the article in this issue giving details of an installation in Norristown, N. J.

Member of the Audit Bureau of Circulations

VOL. 100, NO. 23

NOVEMBER 9, 1931

## Contents

	Page
Do We Really Air Condition?.....	13
<i>The editorial.</i>	
Walter Goetz Uses His Own Model Plant for Demonstration .....	14
<i>Many contractors flirt with the idea of making their own furnace a demonstration installation. This contractor has been doing this for years with excellent results.</i>	
Sheet Metal on the Kennett Consolidated School.....	17
<i>A picture story of a copper job on a large eastern school building.</i>	
Goelet Building—A New Example of Metal in Architecture .....	18
<i>One of New York's newest buildings uses metal extensively for protection and decoration. The result is several novel applications of metal.</i>	
A New Heating Problem.....	21
<i>Another heating problem to put your teeth in. This reader wants some help on a combination pipeless and single pipe plant which doesn't work as it should.</i>	
Fan Blast Engineering.....	22
<i>Platte Overton introduces readers to an accurate yet simple method of designing ducts and branches to resistance so that dampers are not required.</i>	
A Two-Branch Duct, Square to Rectangle.....	25
<i>L. F. Hyatt, Contributing Editor, develops a pattern for a furnace fitting a reader wants help on.</i>	
A Gas Fired, Forced Air Plant Operates on 520 B.t.u. Gas .....	26
<i>A gas fired plant which is operating on manufactured gas. The piping system has several features of interest.</i>	
Ventilating a Service Garage.....	29
<i>Paul R. Jordan explains how garages can be ventilated for winter occupancy. Much of this information can be used by the progressive ventilation contractor.</i>	
New Items and News Items .....	31

JOSEPH D. WILDER  
Editor

Published Every Other Monday

Copyright 1931 by

PORTER-SPOFFORD-LANGTRY CORPORATION

139 North Clark Street, Chicago—Telephone Central 7670

Fred D. Porter, President

John C. Langtry, Vice-President

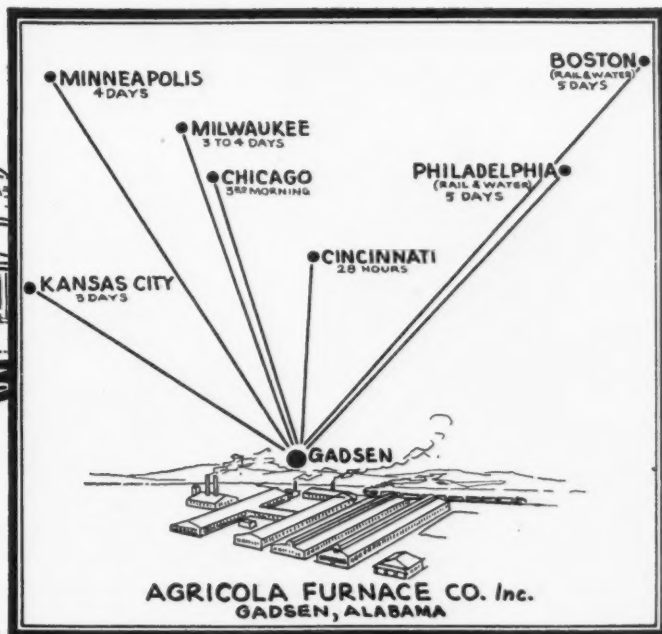
Howard H. Bede, Secretary

Circulation Manager: John R. Hannon Business Manager: Etta Cohn Advertising Representative: Charles E. Kennedy

New York Office: 295 Madison Avenue, Room 1109, Tel. Ashland 4-5342—L. R. Hudson, Eastern Representative

Yearly Subscription Price—In United States, \$2.00; Canada (including duty), \$4.30; Foreign, \$4.00; Single Copies, \$.25

Entered as second-class matter, January 29, 1930, at the Post Office at Chicago, Illinois, under the act of March 3, 1879. Formerly entered on June 25, 1887, as American Artisan and Hardware Record



## SPEEDY SHIPMENTS EVERYWHERE

Four railroads rush carload shipments of AGRICOLA FURNACES from our plant in Gadsden to distant cities in unbelievably fast time! The chart above indicates the delivery schedules maintained for Agricola Dealers to a number of these points. Let us check the delivery time to your city. Write today for the interesting facts about Agricola advantages. No obligation.

Tennessee Alabama & Georgia R.R.  
45 Medical Bldg., Gadsden, Ala.

Columbus, Ohio

Gentlemen:

We are writing a letter of appreciation for the service rendered in putting car S.O.U. 168258 from Gadsden, Ala., to Columbus. This car arrived in Columbus on the B & O team track and the writer was called by the Company at 7:40 Monday morning. We consider this extraordinary good service and we thank you very kindly.

Very truly yours,  
THE RAMEY MFG. CO.  
By L. S. McKnight

**AGRICOLA FURNACE COMPANY, Inc.**  
Gadsden, Alabama  
Offices in Principal Cities



# Agricola

## "SUPREME"

Say you saw it in AMERICAN ARTISAN—Thank you!



# It was an Umbrella



... *not a* **LIGHT**  
that the Colossus of Rhodes  
held in his hand

*Excerpts from remarkable letter of B. C. 220 tells why Colossus fell . . . explains an ancient riddle*

" . . . Well, sis, Helios fall down, go boom. Thoth, what a dust the old boy raised! The morning edition of the Rhodes Silver Bugle says: 'Chares, the designer, often stated that he wanted the Colossus to last until 1931, and therefore specified an umbrella over his head made of GOHI (pronounced go-high). It is now alleged that other metal was substituted for GOHI (pronounced go-high) and that due to the failure of the umbrella, water trickled down Helios' neck, eventually undermining the foundation.' Hoping you are the same, yours . . . Goppy."

**W**HEREVER and whenever it is necessary to combat the destructive elements of time, wear, or weather, GOHI is the one, safe, dependable sheet metal to use.

It is recognized as such by thousands of manufacturers, architects, and builders throughout the country who use GOHI where sheet metal is required.

It is proved as such by Time, the unerring tester, who has certified the correctness of the analysis of GOHI — pure iron alloyed with the right amount of copper — for almost a quarter of a century.

If you want your work to last, to be a credit to your skill, to enjoy a low cost-per-year of service, use GOHI.

**THE NEWPORT ROLLING MILL COMPANY, Newport, Ky.**



IT'S THE PURE IRON, ALLOYED WITH  
THE RIGHT AMOUNT OF COPPER, THAT  
GIVES GOHI ITS LASTING QUALITIES.

# GOHI

PRONOUNCED "GO-HIGH"

# SHEET METAL

Write for the name of the Gohi Distributor near you

Mention *AMERICAN ARTISAN* in your reply—Thank you!



The Reason they last Longer...  
*the* METAL



SUPERIOR GUTTERS  
and DOWNSPOUTS

YOU can't beat a good job of GLOBE gutters and downspouts. It gives the lasting, trouble-free service customers have a right to expect . . . which means *satisfied* customers and *reputation* for you. For nearly fifty years, GLOBE Sheet Metal Building materials have been creating permanent and profitable business for sheet metal men the country over. GLOBE quality is unchanging because this company controls the manufacture of the metal, as well as the fabrication of the formed product. Every piece is formed with such precision that assembly is always easy, saving time and labor. There is a GLOBE product for every sheet metal building need. Adequate stocks always ready for immediate shipment.



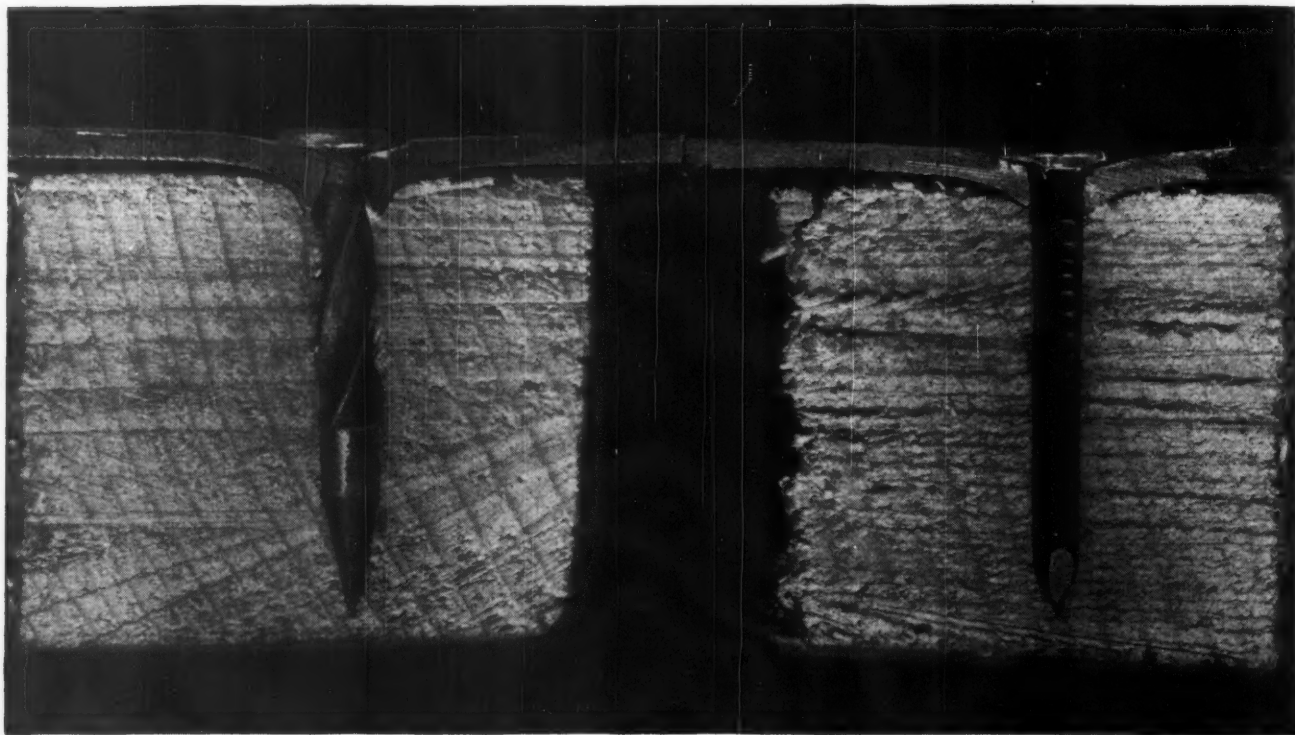
**SHEET  
METAL**

**Building Products**

**The Globe Iron Roofing & Corrugating Company  
Cincinnati, Ohio**

*Say you saw it in AMERICAN ARTISAN—Thank you!*

# THE CAMERA SHOWS *why* Screwnails hold 4 times better than ordinary nails



## Hardened Screwnail Fastening

See how the hardened spiral threads cut into the metal and worm into the wood like a screw. No punch used to make the hole—the hardened needle point pierced the metal with ease.

## Ordinary Nail Fastening

Note loose fit of nail in metal and wood. Vibration or expansion and contraction will loosen and back it out. Hole in metal was punched because the nail would not pierce it without bending.



So that you could see why Hardened Screwnails hold four times better than ordinary nails we made some fastenings, split them open, and had them photographed about twice actual size. Look at them. Notice the way the hardened spiral threads on the Screwnail cut into the sheet metal, and worm their way into the wood like a screw. Screwnails cannot back out or loosen. When you fasten cornices, metal ceilings and siding, gutters, flashings and other sheet metal

work to wood with Hardened Screwnails you can be sure of a **SECURE** job.

*It's easier to use these unique Nails, too.* They have a hardened needle point which pierces sheet metal easily. Their great tensile and shear strength prevents bending and breaking.

Try Hardened Screwnails, **FREE**. Send the coupon for samples. See how easily you can make superior sheet metal to wood fastenings with Screwnails.

**PARKER-KALON** **HARDENED** *Screwnails*  
Reg. U. S. Pat. Off. Patented No. 1482151 Others Pending

Parker-Kalon Corporation, 190 Varick Street, New York, N. Y.  
Send me free samples of the products checked. ☐ Screwnails.  
☐ Masonry Nails. ☐ Sheet Metal Screws.

Name and Co.....

Address .....



**Hardened Masonry Nails**  
For making fastenings to brick, mortar, concrete, etc. Hammer them in—no easier, cheaper way.

**Hardened Self-tapping Sheet Metal Screws**  
The easiest, cheapest means of joining sheet metal and making fastenings to sheet metal.



—Your jobber can supply Parker-Kalon Products.—

Mention **AMERICAN ARTISAN** in your reply—Thank you!

# Providence, R. I. Contractor... does an unusual roofing job with REVERE LEADTEX

The "Standing Seam" method of roofing with sheet metal... plus high grade workmanship... plus Revere Leadtex. These three together have produced an unusually fine roof for the residence of Senator Richard S. Aldrich, at Providence, R. I.

On this roof were 16 big crickets, 6 chimneys, 5 valleys, 12 hips, and over 5000 sq. ft. of sloping area.

David E. Kollen, Sheet Metal Contractor, used Revere Leadtex (16 oz. Revere Sheet Copper, lead coated) for the job. His experience had shown him the permanence of this material, as well as its workability. The mellow gray color of Leadtex was another reason for its selection.

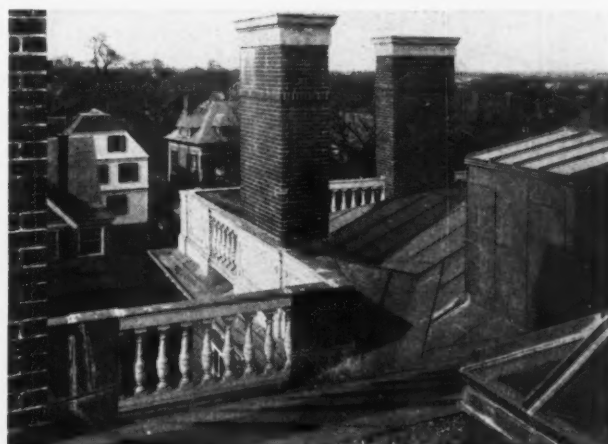
The "Standing Seam" construction was used throughout. A minimum of soldering. Not a nail anywhere through the roofing sheet. All cleats attached by seaming. The seams, running unbroken from hip to gutter, divide the roof into sections... and the Leadtex is applied in such a way that each sheet, each seam section and each roof section can contract or expand without affecting the rest of the roof.

+ + +

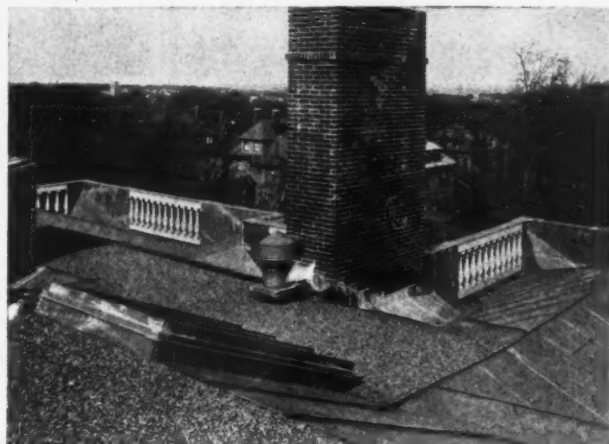
This is one more example of the growing importance of the Sheet Metal Contractor in the building field.

With good workmanship, with fine materials such as Revere Leadtex and Revere Sheet Copper, you too can strengthen your position... increase your business... make bigger profit on high grade jobs.

For further information address Revere Copper and Brass Incorporated, 230 Park Avenue, New York City.



*Fine sheet metal workmanship is evident in every detail of the roof of the Senator Aldrich home. Note particularly how the crickets and valleys behind the balustrade are handled... also construction of the gutter which is double-seamed to the roof.*



*This photo shows the construction of the gravel stops and the flashing of the chimneys. It also gives a good idea of the working out of the seaming, which runs unbroken from hip to gutter.*

## Revere Copper and Brass

INCORPORATED



Baltimore Division, Baltimore, Md. Michigan Division, Detroit, Mich. Higgins Division, Detroit, Mich.  
Dallas Division, Chicago, Ill. Taunton-New Bedford Division, Taunton, Mass. Rome Division, Rome, N. Y.

EXECUTIVE OFFICES: NEW YORK CITY  
GENERAL OFFICES: ROME, N. Y.

Say you saw it in AMERICAN ARTISAN—Thank you!

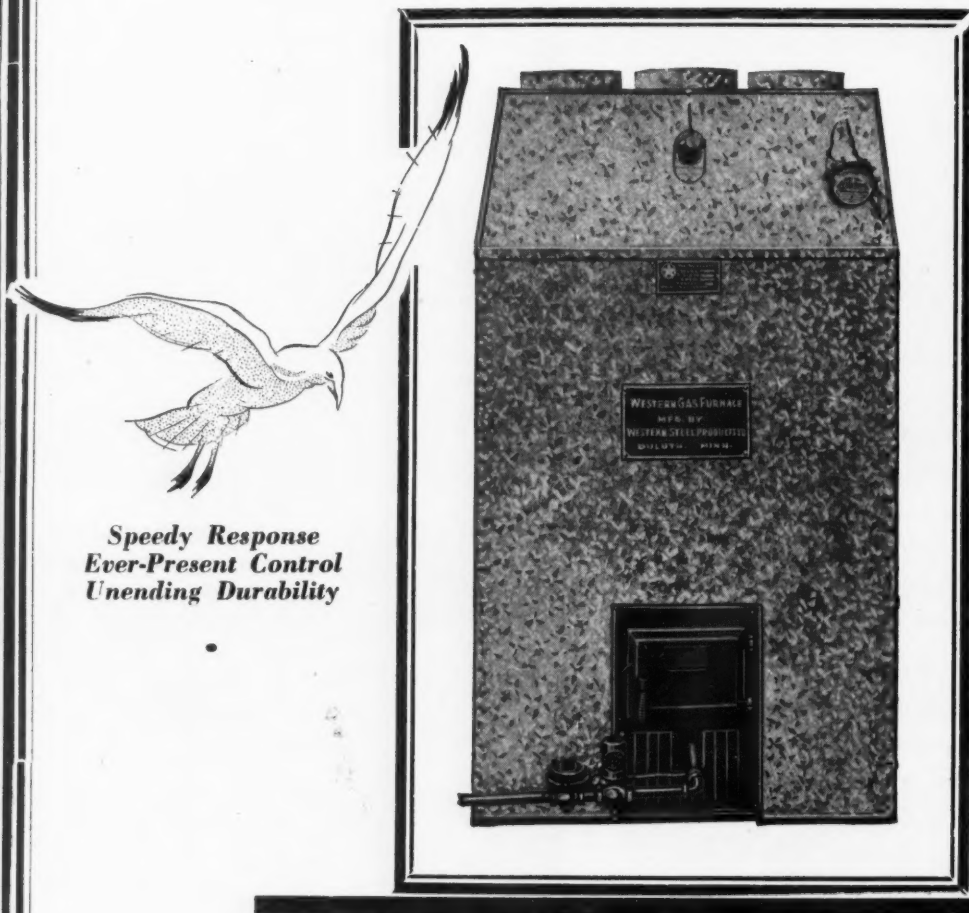


# W E S T E R N

## *Approved by American Gas Association*

The modern Western Gas-fired heating plant has been thoroughly inspected, tested and approved by the American Gas Association. The efforts of veteran furnace craftsmen were recognized by the extremely careful Association that only recommends the most efficient plants.

Are you getting your share of Western profits? Write for information.



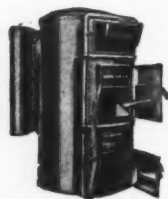
*Speedy Response  
Ever-Present Control  
Unending Durability*

## WESTERN STEEL PRODUCTS CO.

130 Commonwealth Avenue, Duluth, Minn.

*For Southern Distribution:*

521 Westport Avenue, Kansas City, Mo.



*The coal-burning Western has built a reputation that has carried the gas furnace to popularity heights. The demand is still great for the veteran Western—where gas is not convenient.*

*Mention AMERICAN ARTISAN in your reply—Thank you!*





**GALVANIZED SHEETS  
STEEL SHEETS  
PLATES AND  
TIN PLATE**

**GRANITE CITY STEEL CO**  
GRANITE CITY, ILLINOIS

## Quality-Service

**F**OR forming operations, tanks, roofing—in fact wherever flat-rolled steel is used, Granite City Steel can serve you with unusual satisfaction.

Not only is each classification of this steel made to provide a perfect balance of qualities essential for its use in that classification; but delivery service is also unusual. Our mill location at Granite City, Illinois, 20 miles from Saint Louis, served by 29 railroads and the Mississippi River, assures better service to the Mississippi Valley, the West, and the Southwest.

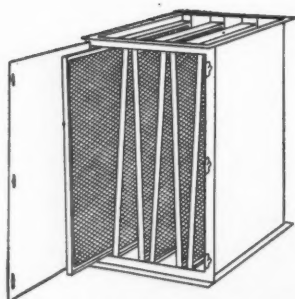
Ample on-hand stocks at our mill warehouse, provide special hurry-up service for jobbers.

Chicago, Dallas  
Kansas City  
Los Angeles



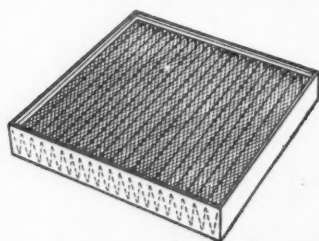
St. Louis, St. Paul  
San Francisco  
Salt Lake City

*Say you saw it in AMERICAN ARTISAN—Thank you!*



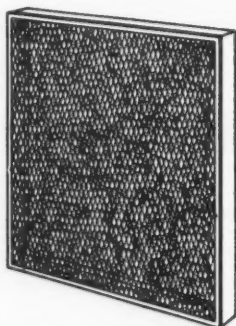
#### **Airmat Cabinet Filter**

A complete filter cabinet using standard 24" x 24" Airmat filter sheets, ready for fan housing and duct connections.



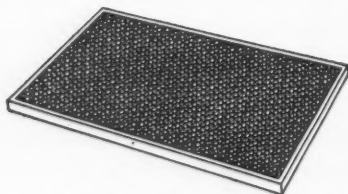
#### **American Drifilter**

Made in standard sizes, 20" x 20" and 16" x 25" with renewable filler. Has the same capacity and space requirement as the Reed Furnace Filter.



#### **Reed Furnace Filter**

The original viscous type furnace filter. Made in two standard sizes, 20" x 20" x 2½" and 16" x 25" x 2½".



#### **American Wafer Filter**

For gravity circulation or fan systems where low resistance is an essential requirement.

# *Announcing*

## **A Complete Line**

of

### AMERICAN **AIR** FILTERS

for

## **Warm Air Heating Systems**

▼

### **A Type for Every Warm Air Requirement in a Wide Range of Prices**

▼

*Made by the World's Largest  
Manufacturer of  
Air Cleaning Equipment*

▼

Distribution through Jobbers  
and Manufacturers, in charge of  
**F. H. MASON**

Send for Bulletin 117 for full information.

# **American Air Filter Company, Inc.**

**113 Central Avenue**

**Louisville, Kentucky**

In Canada, MIDWEST CANADA LTD., Montreal, P. Q.

Mention AMERICAN ARTISAN in your reply—Thank you!

## Do We Really Air Condition?

THERE should be a growing impatience in the warm air heating industry with the improper and promiscuous use of the term "air conditioning" to describe any system which has one more "gadget" than a gravity plant.

If the industry hasn't already awakened to the danger which will unquestionably attend the continuance of this practice, it is high time that the industry did awaken.

If we don't put our house in order now, we are going to suffer public distrust which will take years of effort and cause countless business failures among firms which should have prepared the groundwork for what is to come.

The sooner we can get this whole proposition of air conditioning straightened out so that the public can judge what they are buying by some established and recognized standard, the better it will be for us.

And, incidently, the better for the dealer for under present conditions far too many men seriously believe they are installing an air conditioning system when they hook a filter, a blower and the controls to a new or an old furnace.

These dealers are not the only ones to blame. Our manufacturers have seized upon this term—air conditioning—and adopted it to describe all manner of systems wherein their product is used when as a matter of fact the resulting plant is no more an air conditioning system than a deputy sheriff is the United States government.

As we see it the great need is not for some hard and fast description of what is and what isn't an air conditioning system, but for some basis for determining the DEGREE OF AIR CONDITIONING PROVIDED BY THE EQUIPMENT.

Our belief is in agreement with such authorities as Doctor E. Vernon Hill in that anything you put in a man's basement is in some degree an air conditioning system. Perhaps you only provide heat, perhaps you go another step and add humidity, perhaps you use a third step and provide positive circulation of air, and so on.

But the important thing is that in each step you have conditioned the air in that home TO SOME DEGREE.

Isn't it logical, then, to establish some basis for

judging a heating plant in accordance with its DEGREE OF AIR CONDITIONING?

Our idea of such a codification of air conditioning is as follows:

- Degree 1—Provision for supplying heat.
- Degree 2—Provision for automatically supplying the proper humidity.
- Degree 3—Provision for thermostatic control of room temperatures.
- Degree 4—Provision for positive circulation (supply and exhaust) of warm air.
- Degree 5—Provision for cleaning the air by filters or washers.
- Degree 6—Provision for increasing circulation of air for summer use.
- Degree 7—Provision for cooling the air for summer use.
- Degree 8—Provision for de-humidifying air for summer use.
- Degree 9—Provision for ionization, de-ionization, and de-odorization.
- Degree 10—Provision for treating the carbon dioxide factor.

If a system has a furnace, automatic humidifier, thermostat control, and a blower, it will be a Five Degree Air Conditioning system.

This list is in no way perfect; perhaps you won't agree with the arrangement of the degrees or with the number of them, particularly the last two which so far have been used only in the more elaborate theater and public buildings.

Nevertheless we hope this list will stimulate thought and result in some argument leading to action.

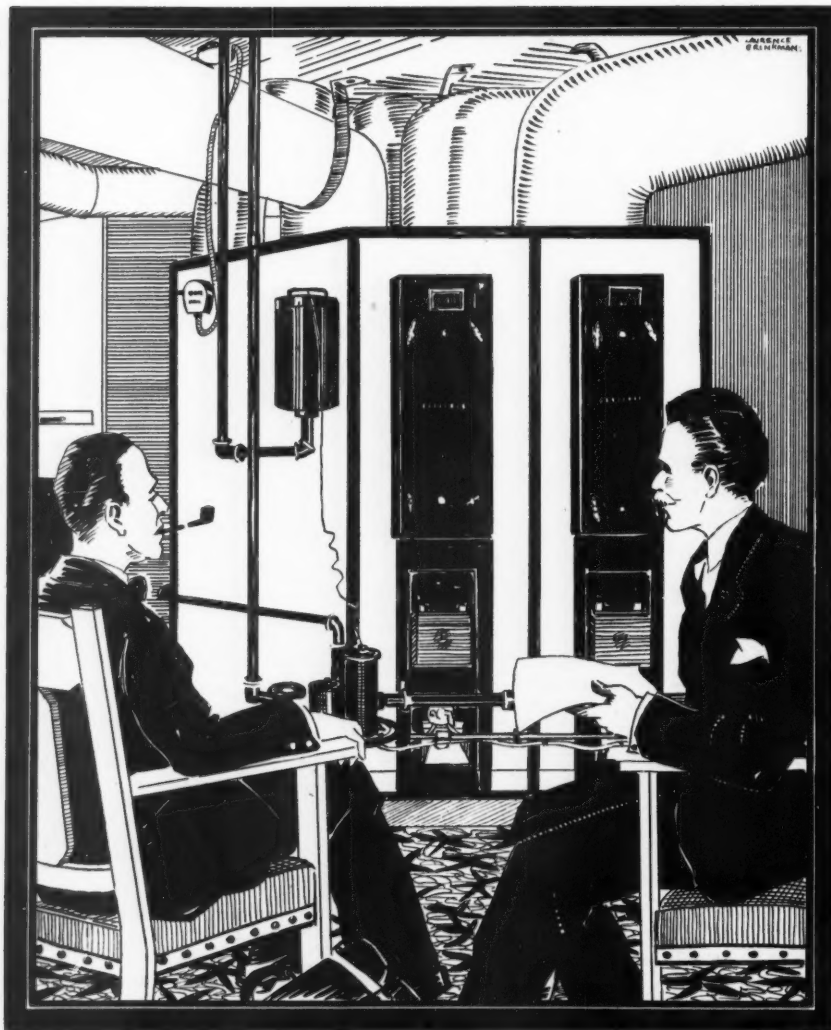
It is just as certain as day is day that if we don't take some such step we will forever be arguing whether or not so and so's system IS an air conditioning system.

Such arguments lead only to one thing—public distrust. The industry will never get anywhere unless the public can judge the degree of air conditioning just as it now judges the degree of house value by considering all the factors which enter into the price.

If we adopt such a scheme any installation can be instantly classified as a four-degree or a six-degree air conditioning system.



# Walter Goez Uses His Own Model



"I take a great deal of pride in my home-located, model heating plant. I have a bright rug, comfortable chairs so the customer can sit and study. I also let him see just how all the 'gadgets' work"

OF all the sales appeals which have been developed through years of selling, none has exceeded and few have equalled the power of the demonstration.

Proof of this statement may be had in any city if the observer will notice how many canvassers carry a demonstrating sample with them or notice how many door-to-door salesmen carry their product with them and ask permission to demonstrate. Most crowds gathered on a street corner or in the entranceway to some empty store watching the demonstration of a condenser guaranteed to increase the fatness of the

spark thrown by a car's spark plugs or the demonstration of a medicine which will cure everything from arthritis to fallen arches, is further proof.

Everywhere the power of the demonstration stands as proof of this method's effectiveness.

This use of the demonstration can and is being used in the warm air heating industry. More and more contractors are adopting the demonstration as a short cut to showing the prospect just what he will get and just how it works. Perhaps the demonstrating heating plant is set up on a display floor or

in the shop window or in some instances an even better place—the contractor's basement to heat his own home.

Contractors who have adopted this home basement demonstrating plant are generally enthusiastic over the method. For instance, there is Walter Goez of the Old Orchard Sheet Metal Works, Inc., Old Orchard, Missouri. Mr. Goez has used a home heating plant demonstrator for several years and believes there is nothing equal to it.

"I believe the home basement demonstrating plant is a very good advertising medium. I am convinced that such an installation is as good a way as any to sell heating plants, especially when the plant you want to sell has all the latest gadgets and does the very latest tricks in warm air heating. I take my prospects to my home, where I have a system I think is a model one. I let them watch the plant operate and let them play with all the appliances attached to the furnace.

"My idea is not original. I got it from an experience buying a piano. The store I visited had the show room softened with dark velvet walls and right in the center was a sparkling piano. Around the room were gold chairs and a subdued lighting effect gave the impression of a priceless piece of merchandise suitably displayed. When I entered the room the piano was playing softly. That staging did far more to sell me a piano than all the sales talk I heard in the shop.

"I take a great deal of pride in the installation I have in my home. I have a clean, bright rug in front of the furnace and on the rug there is a pair of comfortable rocking chairs. The prospect is invited to sit down and look the plant over leisurely. I say as little as possible,



# del System for Demonstration Selling

for I have found that the average prospect looks and asks questions and slowly sells himself on the type of heat I use in my own home.

"I keep my furnace painted with enamel and renew the paint just as often as the casing gets frowsy. All the pipes through the basement and the return air pans are painted a good shade of gray and are washed off carefully every week. The gas supply pipe line is painted red.

"It is not at all uncommon for me to come home to lunch and find people interested in Mueller gas furnaces or Emerson blowers which I handle sitting in the basement looking the plant over. Oftentimes I don't even know they are coming or that they are prospects for several of the salesmen attached to the various furnace establishments bring folks down to my basement to show them what the equipment looks like in service. I have even had furnace men, both contractors and manufacturers from cities as far away as Chicago, Pittsburgh and even New York visit and inspect my plant.

"I call this model heating plant my testing laboratory, for I have changed and shifted and altered the equipment until my wife threatens to divorce me if I start to tear anything more out and put in something new.

"Just to show how this plant has progressed through all the stages of advance the warm air heating industry has witnessed during the past several years, I might say that in the last seven years the plant has been changed at least once in some major degree and several more times in some minor degree.

"The first year I used my basement for a demonstrating and testing laboratory I had a gravity, coal burning plant. It cost me just \$120 to heat the house that year. The second year I added one of the first booster fans to the system, but

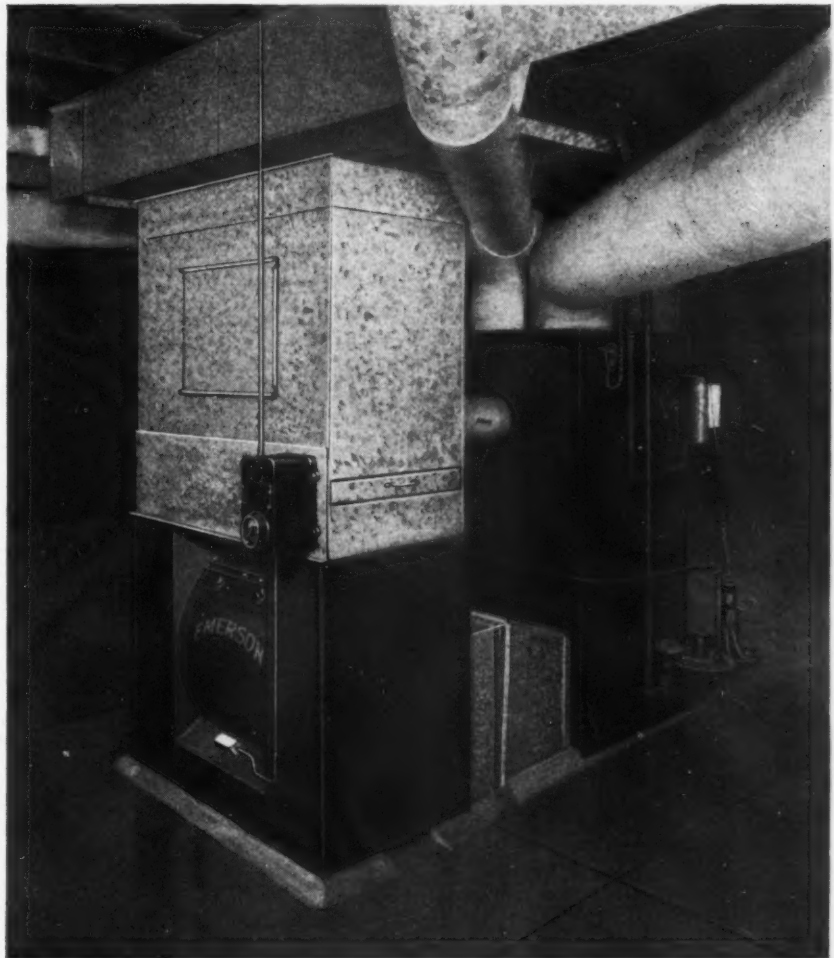
could not detect any saving in fuel. Neither did the system work much better.

"The third year I left the furnace in place but took off the fan, but added an oil burner and changed to rectangular ducts and my heating cost for the year advanced to \$162. The fourth year I left the burner in the same furnace, but put on another type of fan and found my heating cost for the year was dropped to \$158, which was too small a saving to state definitely as due to the change in equipment.

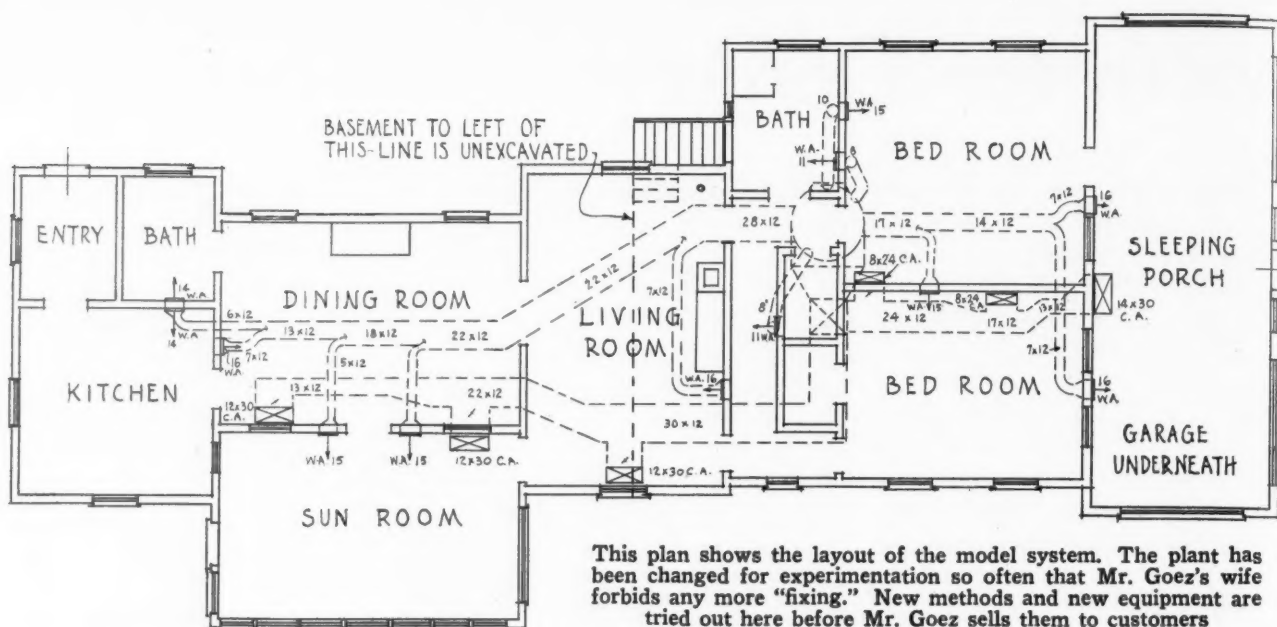
"The fifth year I removed both furnace and fan and substituted a gravity gas furnace. This winter the cost went up to \$196. In the sixth year I added another booster

fan to the gas furnace and had somewhat more uniform heating and lowered the cost \$6.00 for the season. However, I eliminated considerable work over the fourth year and also over the hard fuel years. During this sixth year I also tore out all the system and substituted a Mueller Gas Era operating on gravity and had my cost increased to \$195 again.

"This last winter I left the furnace as it was and added the Emerson blower. My heating cost was reduced to \$180, but since this last winter was much milder than the winter preceding, the weather may have had more or as much to do with the reduced cost as the change in the system. However, I



This is a photograph of Mr. Goetz's model plant. Even competitive furnace men and salesmen for oil burners, controls, blowers, use the model plant to explain just what they are talking about



also heated another room which had previously not had heat and raised the temperature throughout the house from 73 to 75 degrees. So all in all I think my modern system is more efficient than any I have had previously."

Mr. Goez's house has nine rooms and two baths. The house is 65 feet deep by 46 feet wide with 9-foot ceilings on the first floor and 8-foot 6 ceilings on the second floor. Although there are some 42 windows and two doors, none of these is weatherstripped. The heating system as now installed heats these rooms without trouble.

The plan shows the layout of the system in Mr. Goez's home. The heating plant is located close to the center of the basement. Most of the warm air leaders are bunched into rectangular ducts with one long duct running toward the far end of the basement. Five branches are taken off this one duct with three branches taken off the shorter duct extending in the opposite direction.

The large sun room has two supply registers and one return, all on the inside wall. The two first floor bedrooms, the living room, the dining room, kitchen and two baths each have one supply, while the glass walled sun room has two registers. The kitchen and bath are heated from one double head riser.

Second floor rooms are heated from first floor stack heads.

Return air is taken from the sleeping porch, each bedroom, living room, dining room and sun room all through floor grilles. This return from so many rooms requires two return air ducts as shown.

The plan also shows that all the area under the kitchen, pantry, bath, dining room, sun room and part of the living room is unexcavated. The ducts which pass through this area are insulated.

Mr. Goez relates an interesting story showing how his plant can be converted into a summer cooling system. One hot day last summer twenty guests attended a dinner. Two of the guests were over 75 years old and greatly effected by heat. On the day of the story, temperatures hovered around 104 degrees. Mr. Goez closed all the windows and placed two large blocks of ice in the sides of the blower. After running the fan for some time, inside temperatures were dropped to 70 degrees and held there all during the time the guests were in the house.

One of the things Mr. Goez says he is certain will soon be popular is a system of cooling for hot weather. Furnace men generally,

believes Mr. Goez, are like the shoe repair men who like to experiment on the other man's shoes, but stick to old and tried methods on their own footwear. If more heating men would stop trying to do all their experimenting on the other fellow's furnace and do a little experimenting on their own plants some logical and definite progress would result. Such a program, he believes, would do away with a whole lot of the furnaces which the heating contractor built for himself in the year one and has left just as it was installed ever since.

"It is my belief," says this contractor, "that the furnace industry has done too much talking about heat and not enough talking about cooling and air conditioning. Heating and cooling should be talked about simultaneously. Since every owner of a furnace is a prospect for a cooling or forced air system, anything the trade can do to talk up this important subject will be time and effort well spent. This program should have the active co-operation of the manufacturers as well as the dealers. If all interested parties co-operate locally and nationally to place the message of air conditioning before the public, it will not be long until air conditioning will be a known and wanted convenience."



The new consolidated school is a huge structure adequately protected with sheet metal

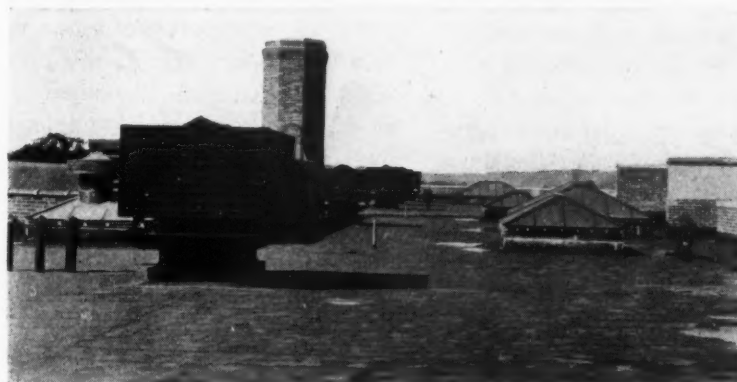
## New Kennett Square School Protected by Sheet Metal



Above is one of the metal ventilators which withdraw air from a laboratory

At the right is one of the skylights fabricated of sheet metal and glass. The flashing is also copper

Looking across the roof (below) there are a number of skylights and ventilators of sheet metal to be seen. All of this metal work was fabricated in the shop of Wm. Shinn of Wilmington



**T**HE Kennett Square Consolidated School is said to be the largest consolidated school in the United States and is to cost in the neighborhood of one million dollars. Two townships adjoining the boro of Kennett and an independent district will be benefited by this large school so that several small one room schools will close their doors to the march of progress. This school will accommodate 1,600 pupils.

The school, a three-story structure of buff brick trimmed with Indiana limestone is approximately 410

feet long by 160 feet deep at the center and 60 feet deep at the east and west wing.

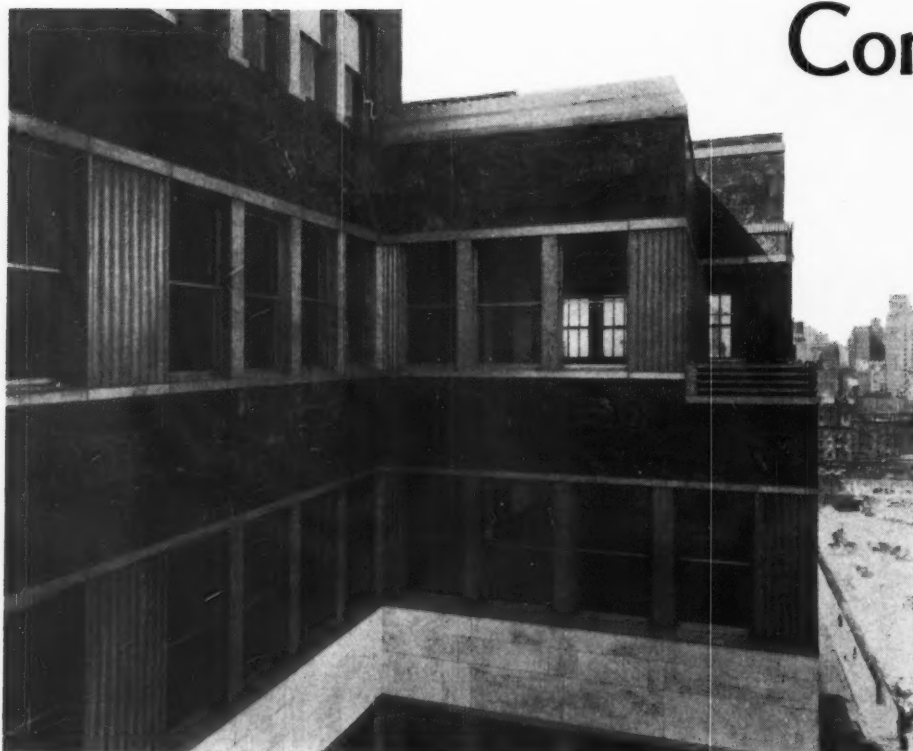
On the outside most of the operating items are of metal. All conductors on the front are of the inside type without any heads. On the ends and rear outside conductors are used. There are a number of large copper skylights and ventilators around the roof. These light and ventilate inside rooms or laboratories. Some of these ventilators are of an unusual type being square with louvered storm bands. There is also a large amount of copper in the two-piece flashings.

The sheet metal contractor on the copper work was Wm. Shinn and Co., of Wilmington, Delaware.





# Goelet Building— Contribution to



This picture taken near the top of the building shows a typical window treatment—all metal frames, sash, mullions, pilasters, lintels and sills—and the marble sections between floors. The balcony has special metal ornamentation.

**T**HERE is just now being completed in New York City on Fifth Avenue at Forty-Ninth Street, a building which possesses a number of striking architectural features, the most important one being the unusual adoption of metal to provide ornamentation and protection.

Architecturally the building may be classed as another addition to New York's growing list of structures which architects say point the way to what may be expected in building design and construction in the next few years.

This interesting structure is known as the Goelet Building and was designed and built for the Goelet Estate by the firm of E. H. Faile and Company, New York. The sub-contractor who handled the exterior and interior metal work is the General Bronze Corporation of Long Island City.

The exterior appearance of the building is unusually striking, with verde green antique marble, vertical piers and pilasters and white marble forming horizontal bands around

the exterior between floors. The window frames and sash are extruded aluminum, the sills are extruded aluminum, the mullions and pilasters are combination cast and extruded aluminum, while the ornamentation at the setbacks and at the top and the coping caps are extruded and sheet aluminum.

All the aluminum used on the building was satin finished.

The building is unusual in architectural type in that the exterior wall of the floors is practically all glass area with only the narrow mullions separating the windows, while the first two floors have an even larger percentage of glass area since structural columns are set back five feet and only window mullions break the glass expanse.

In the use of color on the exterior, light satin finished aluminum is contrasted with very dark green marble for the primary contrast and with white marble bands around the mid section of the elevations.

This use of metal in securing contrasting color and in making possible large glass areas is said to

be a future development in architectural design in American office buildings.

In detail, perhaps the most interesting feature of the metal work is the handling of the sash, frames, mullions and pilasters. The detail drawings show most of the features of this part of the work. The window glass is held in double hung sash of extruded aluminum shapes. The jambs are of somewhat unusual cross section with both sash tracks and guides, cast head blocks and a special rubber weight buffer in the weight wells.

Since the architect's idea was to provide as much glass area as possible, all windows are separated only by comparatively narrow mullions of extruded aluminum or verde antique marble. Aluminum mullions are of hollow U shape and are held to the building by long bolts which turn into an inner shell of the mullion and pass between a pair of structural angles. The nut on the inner end of the bolt is turned against a plate, which in turn presses against the sides of the

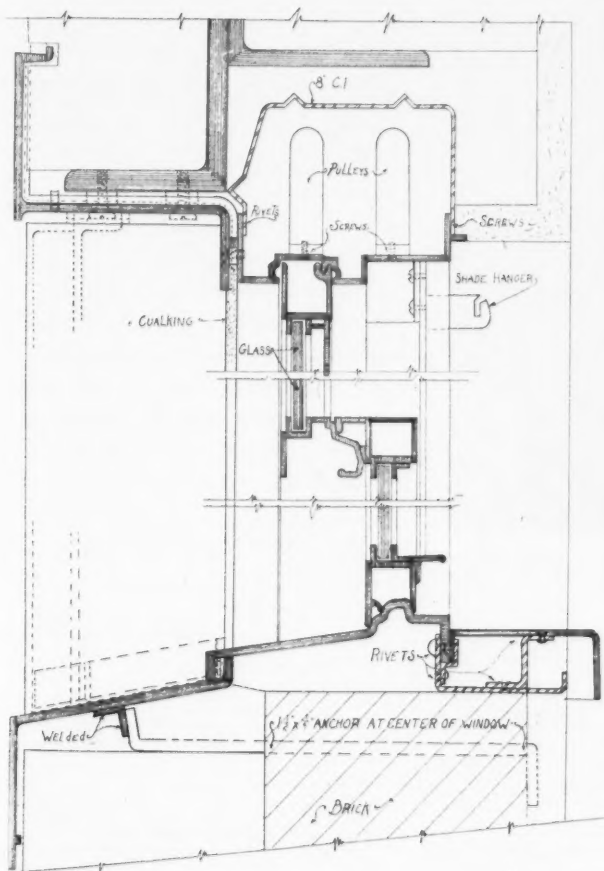


# New York's New Metal and Marble to the Architecture of the Future

window frames. The frames are held into the wall through cast aluminum head blocks or wall ties which in turn are fastened to the structural frame.

The window sills are of special design. The sill of extruded aluminum is of the continuous type, that is, the sill and the exterior apron extend under a bay of four windows. The exterior apron is made with a turned down lip which rests on a lower wall sill of cast alumi-

The exterior of the building is a contrast of colors—satin finish on the metal, dark green and white marble and clear glass. While the building is not large for New York, it is said to be an important architectural development.



This cross section shows the metal sash, frames, sill, apron, stool and lintel. Both cast and extruded aluminum are used.

num. This wall sill passes up behind the lip of the frame sill and on the outside turns down over the marble below the window. The space between the two lips of the sills is caulked for moisture exclusion. The wall sill is held in place by a  $\frac{1}{4}$  by  $1\frac{1}{2}$ -inch strap embedded in the masonry backup.

The lintel over the windows is really a continuous row of extruded forms held in place by aluminum screws passed through aluminum sleeves and into structural angles. These lintel sections have a turned back top ending in an upright lip which is caulked into the marble work above. The lintels were fur-



nished in sections as long as the window group below with shorter sections above the pilaster sections.

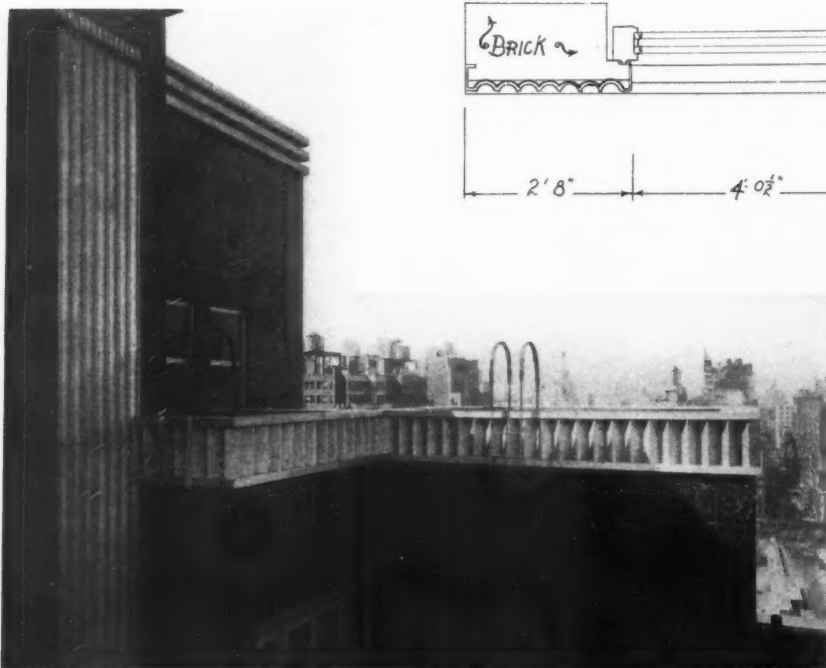
The central pilaster of the light courts, the inside corners of these courts, the outside corners of the court and the main corner of the building are all finished in fluted pilasters of cast aluminum. These pilasters are held into the masonry back-up by aluminum machine screws with heads on the outside. The central pilasters are finished along the edges by a plain extruded section corresponding to the mullions, while the inside court pilasters are 90 degree angle fluted faces.

The top of the building is orna-

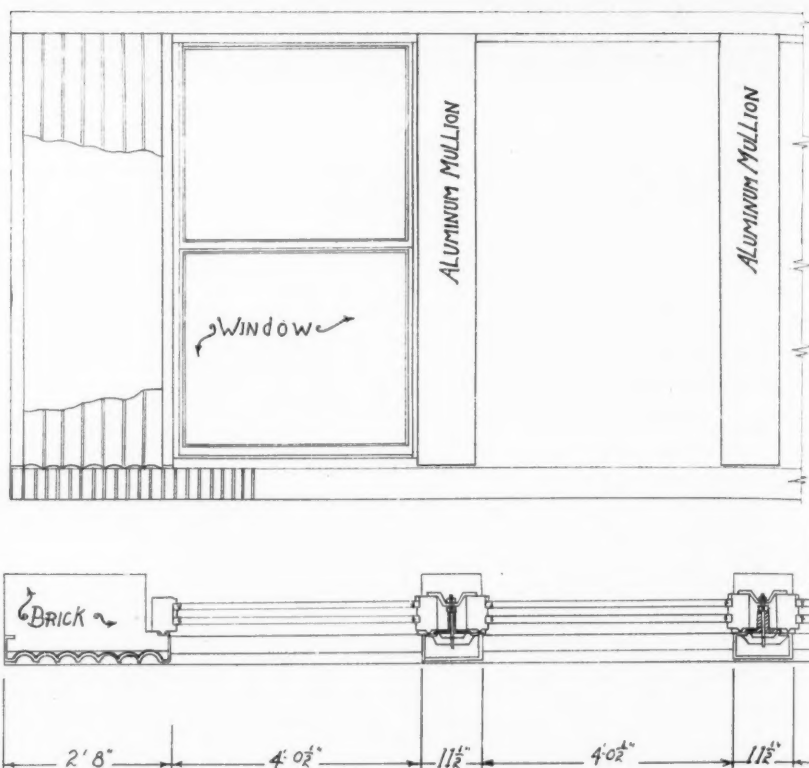
mented by tall pilasters of fluted, extruded aluminum capped with extruded metal as shown on one of the photographs. These pilasters are held to the wall by long aluminum anchor frames.

There is in the center of each street face one tall pilaster which is carried above the coping level and across the top of the coping. This pilaster has a three step face and is made of extruded metal fabricated in three vertical sections. These sections are single locked top and bottom and are held to special structural work behind.

Special ornamentation is used on



The detail above shows the elevation and plan of a typical window section. Dimensions of the various parts are indicated.



This pilaster and the ornamental band are fabricated from cast and sheet aluminum. Interesting methods were used to hold these sections together and to the wall.

topmost coping of the central portion of the building, there is an ornamental metal band of extruded metal. The design consists of a flat sill and coping with a band of triangular panels set between. The sill and coping are plain faced and plain surfaced and an entire section consisting of coping, sill and triangles was fabricated in the shop.

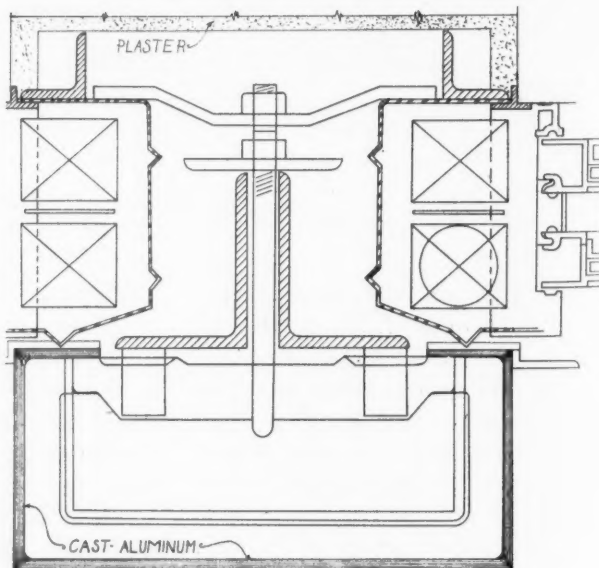
(Continued on page 24)

the small balconies at the tenth floor level. The horizontal railings are extruded metal held apart by special cast aluminum sections resembling flattened balls. The ends of this railing are plain faced pilasters.

Around the top of the eleventh floor there is a special extruded aluminum coping cap having a double sloping top and a lip which extends over the face of the marble below. These coping caps are held to the masonry by expansion fastenings passed through sleeves.

At a level which should be the thirteenth floor and just under the

This enlarged drawing shows how the aluminum mullions are made up and how these mullions are held in place. The drawing also shows the design of the sash and the jambs.



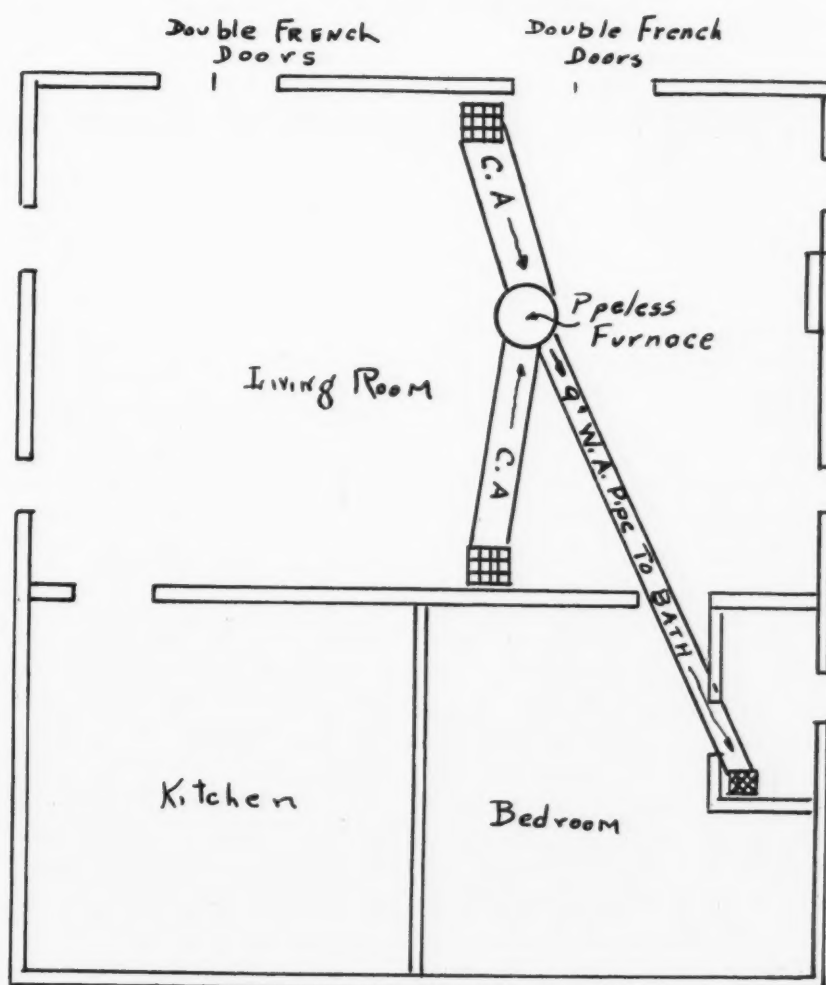
# This System, Even With the Robber Doesn't Heat the Bath

**And the Owner Wants Heat in His Bath. Perhaps You Can Suggest a Change to Do the Trick**

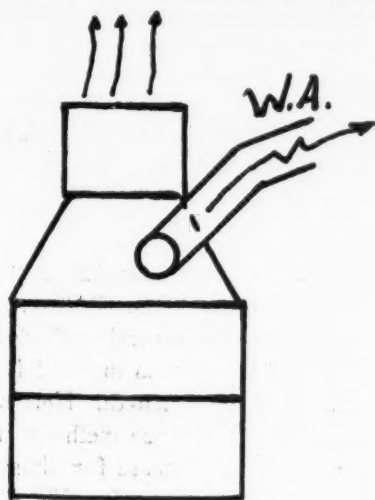
THE plan with this article shows the layout for a pipe-less system which a reader installed, but which doesn't work as it should. The furnace has two cold air returns as shown on the plan. These connect into the bottom of the casing in the usual manner.

The owner wanted individual heat supply in the bathroom so a 9-inch pipe was run as shown. One of the small details shows that this pipe was taken off the side of the bonnet at a good pitch. The other detail shows a heat robber which was put over the inside end of the pipe to gather in extra supply. This hood is a flat cone and is 18 inches in diameter. It is toward one side of the casing and about 2 inches above the radiator.

Even with this additional supply



This plan shows how the system is in now. The details below show the bath supply and the robber added later. Still the bath is cold. What would you do on this layout?



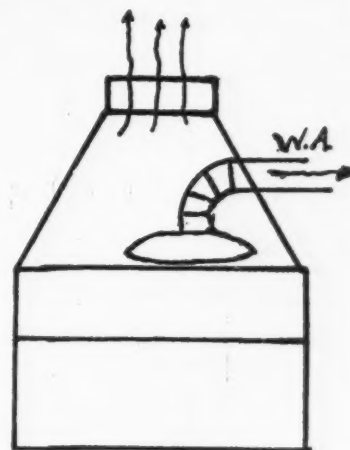
**9" PIPE TAKEN OFF WITH GOOD PITCH LIKE THIS**

the bathroom is too cold for the owner.

The reader wants to know if any AMERICAN ARTISAN subscriber has solved a problem of this kind and if so will he please send in a sketch showing how the remedy was applied.

The reader says he is considering running a 6-inch pipe from one of the cold air ducts to this 9-inch supply with the idea that this robber will create a draft and increase flow through the pipe.

Will any readers who have used some sort of a heat robber successfully give us some ideas on this?



**9" PIPE HOODED LIKE THIS ON INSIDE**



# FAN BLAST ENGINEERING

By PLATTE OVERTON  
Heating Engineer

## Designing Trunks and Branches to Resistance

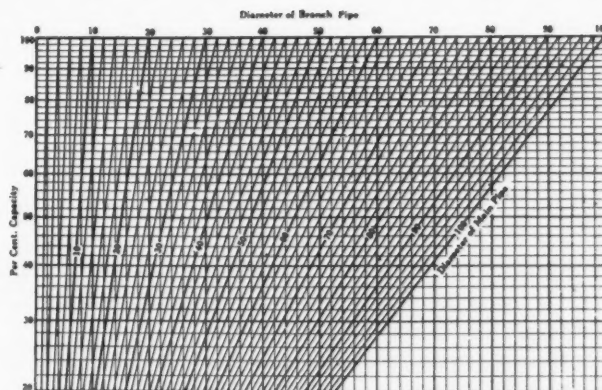
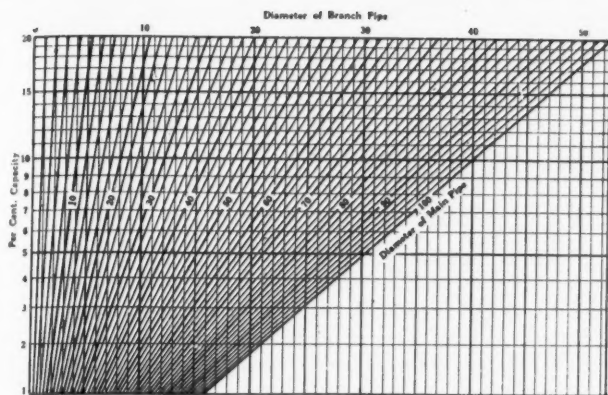
IT is the function of trunk line and branches to carry the necessary air to the base of the various risers. In mechanical systems in residences these risers are generally small. They are confined to the available space in partitions. Standard sizes may be termed  $3\frac{1}{2}'' \times 10'' - 12'' - 14''$  or where 6-inch studs are used  $5'' \times 6'' - 8'' - 10'' - 12'' - 14''$ . Velocities in these risers will vary from 350 feet per minute in the  $3\frac{1}{2}'' \times 10''$  to 800 feet per minute in the  $5'' \times 14''$ . We might term these "allowable" velocities. The designer may find it necessary to diverge from these velocities in extreme cases. For example, a  $3\frac{1}{2}'' \times 10''$  stack will carry 100 c.f.m. to the second floor, but we should use the  $3\frac{1}{2}'' \times 12''$ . Again, a large second floor bedroom may require 250 c.f.m. A  $5'' \times 12''$  stack will carry this c.f.m. at a velocity of 600 feet per min., but two  $3\frac{1}{2}'' \times 12''$  stacks would be better. They give us two inlets into the room that

may be placed far apart and provide a better distribution. However, if only one riser will reach to room

dose of plain common sense will work wonders in these problems.

Fig. 15 is the trunk line and

2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100	101	102	103	104	105	106	107	108	109	110	111	112	113	114	115	116	117	118	119	120	121	122	123	124	125	126	127	128	129	130	131	132	133	134	135	136	137	138	139	140	141	142	143	144	145	146	147	148	149	150	151	152	153	154	155	156	157	158	159	160	161	162	163	164	165	166	167	168	169	170	171	172	173	174	175	176	177	178	179	180	181	182	183	184	185	186	187	188	189	190	191	192	193	194	195	196	197	198	199	200	201	202	203	204	205	206	207	208	209	210	211	212	213	214	215	216	217	218	219	220	221	222	223	224	225	226	227	228	229	230	231	232	233	234	235	236	237	238	239	240	241	242	243	244	245	246	247	248	249	250	251	252	253	254	255	256	257	258	259	260	261	262	263	264	265	266	267	268	269	270	271	272	273	274	275	276	277	278	279	280	281	282	283	284	285	286	287	288	289	290	291	292	293	294	295	296	297	298	299	300	301	302	303	304	305	306	307	308	309	310	311	312	313	314	315	316	317	318	319	320	321	322	323	324	325	326	327	328	329	330	331	332	333	334	335	336	337	338	339	340	341	342	343	344	345	346	347	348	349	350	351	352	353	354	355	356	357	358	359	360	361	362	363	364	365	366	367	368	369	370	371	372	373	374	375	376	377	378	379	380	381	382	383	384	385	386	387	388	389	390	391	392	393	394	395	396	397	398	399	400	401	402	403	404	405	406	407	408	409	410	411	412	413	414	415	416	417	418	419	420	421	422	423	424	425	426	427	428	429	430	431	432	433	434	435	436	437	438	439	440	441	442	443	444	445	446	447	448	449	450	451	452	453	454	455	456	457	458	459	460	461	462	463	464	465	466	467	468	469	470	471	472	473	474	475	476	477	478	479	480	481	482	483	484	485	486	487	488	489	490	491	492	493	494	495	496	497	498	499	500	501	502	503	504	505	506	507	508	509	510	511	512	513	514	515	516	517	518	519	520	521	522	523	524	525	526	527	528	529	530	531	532	533	534	535	536	537	538	539	540	541	542	543	544	545	546	547	548	549	550	551	552	553	554	555	556	557	558	559	560	561	562	563	564	565	566	567	568	569	570	571	572	573	574	575	576	577	578	579	580	581	582	583	584	585	586	587	588	589	590	591	592	593	594	595	596	597	598	599	600	601	602	603	604	605	606	607	608	609	610	611	612	613	614	615	616	617	618	619	620	621	622	623	624	625	626	627	628	629	630	631	632	633	634	635	636	637	638	639	640	641	642	643	644	645	646	647	648	649	650	651	652	653	654	655	656	657	658	659	660	661	662	663	664	665	666	667	668	669	670	671	672	673	674	675	676	677	678	679	680	681	682	683	684	685	686	687	688	689	690	691	692	693	694	695	696	697	698	699	700	701	702	703	704	705	706	707	708	709	710	711	712	713	714	715	716	717	718	719	720	721	722	723	724	725	726	727	728	729	730	731	732	733	734	735	736	737	738	739	740	741	742	743	744	745	746	747	748	749	750	751	752	753	754	755	756	757	758	759	760	761	762	763	764	765	766	767	768	769	770	771	772	773	774	775	776	777	778	779	780	781	782	783	784	785	786	787	788	789	790	791	792	793	794	795	796	797	798	799	800	801	802	803	804	805	806	807	808	809	810	811	812	813	814	815	816	817	818	819	820	821	822	823	824	825	826	827	828	829	830	831	832	833	834	835	836	837	838	839	840	841	842	843	844	845	846	847	848	849	850	851	852	853	854	855	856	857	858	859	860	861	862	863	864	865	866	867	868	869	870	871	872	873	874	875	876	877	878	879	880	881	882	883	884	885	886	887	888	889	890	891	892	893	894	895	896	897	898	899	900	901	902	903	904	905	906	907	908	909	910	911	912	913	914	915	916	917	918	919	920	921	922	923	924	925	926	927	928	929	930	931	932	933	934	935	936	937	938	939	940	941	942	943	944	945	946	947	948	949	950	951	952	953	954	955	956	957	958	959	960	961	962	963	964	965	966	967	968	969	970	971	972	973	974	975	976	977	978	979	980	981	982	983	984	985	986	987	988	989	990	991	992	993	994	995	996	997	998	999	1000	1001	1002	1003	1004	1005	1006	1007	1008	1009	1010	1011	1012	1013	1014	1015	1016	1017	1018	1019	1020	1021	1022	1023	1024	1025	1026	1027	1028	1029	1030	1031	1032	1033	1034	1035	1036	1037	1038	1039	1040	1041	1042	1043	1044	1045	1046	1047	1048	1049	1050	1051	1052	1053	1054	1055	1056	1057	1058	1059	1060	1061	1062	1063	1064	1065	1066	1067	1068	1069	1070	1071	1072	1073	1074	1075	1076	1077	1078	1079	1080	1081	1082	1083	1084	1085	1086	1087	1088	1089	1090	1091	1092	1093	1094	1095	1096	1097	1098	1099	1100	1101	1102	1103	1104	1105	1106	1107	1108	1109	1110	1111	1112	1113	1114	1115	1116	1117	1118	1119	1120	1121	1122	1123	1124	1125	1126	1127	1128	1129	1130	1131	1132	1133	1134	1135	1136	1137	1138	1139	1140	1141	1142	1143	1144	1145	1146	1147	1148	1149	1150	1151	1152	1153	1154	1155	1156	1157	1158	1159	1160	1161	1162	1163	1164	1165	1166	1167	1168	1169	1170	1171	1172	1173	1174	1175	1176	1177	1178	1179	1180	1181	1182	1183	1184	1185	1186	1187	1188	1189	1190	1191	1192	1193	1194	1195	1196	1197	1198	1199	1200	1201	1202	1203	1204	1205	1206	1207	1208	1209	1210	1211	1212	1213	1214	1215	1216	1217	1218	1219	1220	1221	1222	1223	1224	1225	1226	1227	1228	1229	1230	1231	1232	1233	1234	1235	1236	1237	1238	1239	1240	1241	1242	1243	1244	1245	1246	1247	1248	1249	1250	1251	1252	1253	1254	1255	1256	1257	1258	1259	1260	1261	1262	1263	1264	1265	1266	1267	1268	1269	1270	1271	1272	1273	1274	1275	1276	1277	1278	1279	1280	1281	1282	1283	1284	1285	1286	1287	1288	1289	1290	1291	1292	1293	1294	1295	1296	1297	1298	1299	1300	1301	1302	1303	1304	1305	1306	1307	1308	1309	1310	1311	1312	1313	1314	1315	1316	1317	1318	1319	1320	1321	1322	1323	1324	1325	1326	1327	1328	1329	1330	1331	1332	1333	1334	1335	1336	1337	1338	1339	1340	1341	1342	1343	1344	1345	1346	1347	1348	1349	1350	1351	1352	1353	1354	1355	1356	1357	1358	1359	1360	1361	1362	1363	1364	1365	1366	1367	1368	1369	1370	1371	1372	1373	1374	1375	1376	1377	1378	1379	1380	1381	1382	1383	1384	1385	1386	1387	1388	1389	1390	1391	1392	1393	1394	1395	1396	1397	1398	1399	1400	1401	1402	1403	1404	1405	1406	1407	1408	1409	1410	1411	1412	1413	1414	1415	1416	1417	1418	1419	1420	1421	1422	1423	1424	1425	1426	1427	1428	1429	1430	1431	1432	1433	1434	1435	1436	1437	1438	1439	1440	1441	1442	1443	1444	1445	1446	1447	1448	1449	1450	1451	1452	1453	1454	1455	1456	1457	1458	1459	1460	1461	1462	1463	1464	1465	1466	1467	1468	1469	1470	1471	1472	1473	1474	1475	1476	1477	1478	1479	1480	1481	1482	1483	1484	1485	1486	1487	1488	1489	1490	1491	1492	1493	1494	1495	1496	149
---	---	---	---	---	---	---	---	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	-----



Above are two charts showing the diameter of branch pipes necessary to carry given percentages of the total air carried in the main pipe with the same friction per foot of length. To use the charts, determine what percentage of air you want the branch pipe to carry; find this percentage at the left; move across to the right until you intersect the size of the main; read directly above at the top the diameter required in the branch

On our basement plan we make the drawing shown in Fig. 15. This is the basis of our design.

We are now ready to design or size the main where it leaves the heater. We have a total of 2,500 c.f.m. and we will size the main at the heater to a velocity of 1,150 feet per minute. This 1,150 feet is in a round duct and velocity will be lower in the rectangular duct. Below is given some data on the preliminary sizes of the main. The larger the duct the greater the allowable velocity with the same friction loss. Residences will vary in requirements from the small 5-room with 800 c.f.m. to the mansion requiring up to 5,000 c.f.m. or more.

800 c.f.m. total 900 ft. per min.  
1,000 c.f.m. total 950 ft. per min.  
1,200 c.f.m. total 1,000 ft. per min.  
2,000 c.f.m. total 1,150 ft. per min.  
3,000 c.f.m. total 1,250 ft. per min.  
4,000 c.f.m. total 1,350 ft. per min.  
5,000 c.f.m. total 1,425 ft. per min.

If the above c.f.m. were in ducts all 100 feet long, they would have the same pressure loss approximately.

There are several methods of designing this system to equal friction per foot of length. We will design this one with the aid of charts 13A and 13B. This chart is for round pipes and branches and we will first draw our system in as round ducts and change them to equivalent rectangular ducts by the aid of Table 14.

On our basement plan we make

the drawing shown in Fig. 15. This is the basis of our design.

As we have 2,500 c.f.m. for our problem we will use the 1,150 ft. velocity and we have  $2,500 \div 1,150 = 2.18$  sq. ft. of duct or a round duct 20 inches in diameter.

Fig. 15—Our first branch will carry the total of 2 stacks with 350 c.f.m. each or 700 c.f.m. Our total c.f.m. equals 2,500. 700 is  $700 \div 2,500 = 28$  per cent of 2,500. We now refer to chart 13 and locate 28 per cent on the left hand side. Follow to the right until we intersect with the 20 inch diameter of main line and then pass perpendicularly to the top of the chart

and read our branch diameter that will carry 28 per cent of the air in the 20-inch main, and find that it falls on the 12-inch duct. Now the main that continues on will carry, 100 per cent less 28 per cent = 72 per cent of a 20-inch duct and we locate 72 per cent on the left line and follow right until we intersect with the 20-inch main, then to the top and find 17½-inch duct. This 17½-inch duct will carry  $2,500 - 700 = 1,800$  c.f.m. We pass on to the next branch and work out the sizes in the same manner. Below is given a reading for the entire system (see Table I):

We now refer to Figure 15 and

TABLE I

2,500 c.f.m. at 1,150 vel. = 2.18 + 20" round duct.	
*700 c.f.m. = 28% of 2,500 = 28% of 20" duct = 12" duct with 700 c.f.m.	
1,800 c.f.m. = 72% of 2,500 = 72% of 20" duct = 17½" duct with 1,800 c.f.m.	
252 c.f.m. = 14% of 1,800 = 14% of 17½" duct = 8" duct with 252 c.f.m.	
1,548 c.f.m. = 86% of 1,800 = 86% of 17½" duct = 16¼" duct with 1,548 c.f.m.	
185 c.f.m. = 12% of 1,548 = 12% of 16¼" duct = 6" duct with 185 c.f.m.	
1,363 c.f.m. = 88% of 1,548 = 88% of 16¼" duct = 15½" duct with 1,363 c.f.m.	
**736 c.f.m. = 54% of 1,363 = 54% of 15½" duct = 12" duct with 736 c.f.m.	
627 c.f.m. = 46% of 1,363 = 46% of 15½" duct = 11" duct with 627 c.f.m.	
314 c.f.m. = 50% of 627 = 50% of 11" duct = 8½" duct with 314 c.f.m.	
313 c.f.m. = 50% of 627 = 50% of 11" duct = 8½" duct with 314 c.f.m.	
*700 c.f.m. in 12" duct.	
350 c.f.m. = 50% of 700 = 50% of 12" duct = 9" duct with 350 c.f.m.	
350 c.f.m. = 50% of 700 = 50% of 12" duct = 9" duct with 350 c.f.m.	
**736 c.f.m. in 12" duct.	
125 c.f.m. = 17% of 736 = 17% of 12" duct = 6" duct with 125 c.f.m.	
611 c.f.m. = 83% of 736 = 83% of 12" duct = 11" duct with 611 c.f.m.	
280 c.f.m. = 46% of 611 = 46% of 11" duct = 8" duct with 280 c.f.m.	
331 c.f.m. = 54% of 611 = 54% of 11" duct = 8½" duct with 331 c.f.m.	

The above tabulation looks complicated, but really isn't. It shows branch by branch out from the heater the calculations required to determine the diameter in round pipe necessary to supply the determined amount of air in each branch and the size of the main after each branch is taken out. By comparing this table with Fig. 15, you can see just how the system was designed for sizes

fill in our sizes from the data as shown.

Our second method is a design for sizes as based on table (Fig. 7).

Here we reduce all our pipe sizes to equivalent 4-inch pipe sizes. This is our most practical method as this table is found in most catalogs thus always available. As mentioned, all duct sizes are reduced to 4-inch on the same percentage basis and the branch and main sizes we find on the left hand edge. At the right (Table II) is given a summary of the various mains and branches.

It will be noted that there are

TABLE II

2,500 c.f.m. in 20" round duct. 20" duct = 56—4" round duct for equal pressure loss			
*700 c.f.m. = 28% of 2,500 = 28% of 54 —4" ducts = 15.7—4" ducts = 12" duct with 700 c.f.m.			
1,800 c.f.m. = 72% of 2,500 = 72% of 54	—4" ducts = 40	—4" ducts = 17½"	duct with 1,800 c.f.m.
252 c.f.m. = 14% of 1,800 = 14% of 40	—4" ducts = 5.6—4" ducts = 8"	duct with	252 c.f.m.
1,548 c.f.m. = 86% of 1,800 = 86% of 40	—4" ducts = 34.4—4" ducts = 16¼"	duct with	1,548 c.f.m.
185 c.f.m. = 12% of 1,548 = 12% of 34.4—4" ducts = 4.1—4" ducts = 7"		duct with	185 c.f.m.
1,363 c.f.m. = 88% of 1,548 = 88% of 34.4—4" ducts = 30	—4" ducts = 16"	duct with	1,363 c.f.m.
**736 c.f.m. = 54% of 1,363 = 54% of 30	—4" ducts = 16	—4" ducts = 12"	duct with 736 c.f.m.
627 c.f.m. = 46% of 1,363 = 46% of 30	—4" ducts = 13.8—4" ducts = 11¼"	duct with	627 c.f.m.
314 c.f.m. = 50% of 627 = 50% of 13.8—4" ducts = 6.9—4" ducts = 8½"		duct with	314 c.f.m.
313 c.f.m. = 50% of 627 = 50% of 13.8—4" ducts = 6.9—4" ducts = 8½"		duct with	314 c.f.m.
*700			
350 c.f.m. = 50% of 700 = 50% of 15.7—4" ducts = 7.8—4" ducts = 9"		duct with	350 c.f.m.
350 c.f.m. = 50% of 700 = 50% of 15.7—4" ducts = 7.8—4" ducts = 9"		duct with	350 c.f.m.
**736 c.f.m.			
125 c.f.m. = 17% of 736 = 17% of 16	—4" ducts = 2.7—4" ducts = 6"	duct with	125 c.f.m.
611 c.f.m. = 83% of 736 = 83% of 16	—4" ducts = 13.3—4" ducts = 11"	duct with	611 c.f.m.
280 c.f.m. = 46% of 611 = 45% of 13.3—4" ducts = 6.1—4" ducts = 11¼"		duct with	280 c.f.m.
331 c.f.m. = 54% of 611 = 54% of 13.3—4" ducts = 7.15—4" ducts = 8½"		duct with	331 c.f.m.

CIRCULAR EQUIVALENTS OF RECTANGULAR DUCTS FOR EQUAL FRICTION

	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
5	42	47	53																									
6	43	52	57	65																								
7	48	58	62	70	75																							
8	52	60	69	76	82	88																						
9	55	64	73	80	87	93	99																					
10	58	67	77	84	92	98	104	110																				
11	60	70	80	88	96	102	109	115	121																			
12	64	75	83	92	100	107	114	120	126	132																		
13	67	77	87	96	104	111	118	125	131	137	143																	
14	77	80	89	99	108	115	123	129	136	143	149	154																
15	83	92	102	111	119	127	134	141	147	153	160	165																
16	85	95	105	114	123	131	138	145	152	158	165	171	176															
17	88	98	108	118	126	135	142	150	158	163	170	176	182	187														
18	90	100	110	120	130	138	146	154	161	168	174	181	187	192	198													
19	103	114	124	133	142	150	158	165	172	179	186	192	198	204	209													
20	105	116	127	136	145	154	162	170	176	184	190	197	203	209	215	220												
22	110	121	132	142	152	161	169	178	185	192	199	206	213	219	225	231	236	242										
24	114	126	138	148	158	168	176	185	193	200	208	215	222	228	235	240	247	252	259	264								
26	118	131	143	154	164	173	183	192	200	208	216	223	230	238	244	251	257	263	269	275	281	286						
28	122	135	148	159	170	180	190	198	207	215	224	231	239	246	253	260	266	273	279	285	291	297	302	308				
30	126	139	152	164	175	185	195	205	214	222	231	239	247	254	262	268	275	282	288	295	301	307	313	319	325	330		
32	129	143	156	169	180	191	201	211	219	229	238	246	254	262	270	277	284	291	298	305	311	317	323	329	335	341		
34	132	147	161	173	185	196	207	216	226	235	244	253	262	269	277	285	292	300	307	313	320	327	333	339	345	351		
36	136	151	164	179	190	201	212	222	232	242	251	260	269	277	285	293	300	308	315	322	329	337	344	351	357	361		
38	139	154	168	182	194	206	217	228	238	248	258	267	275	284	292	300	308	315	323	331	338	346	353	359	365	371		
40	143	157	172	186	198	211	222	233	244	254	264	273	282	291	299	308	316	324	331	339	346	354	360	367	374	380		

The table above is just the same as the table before, except that the figures are secured by using the table in Fig 7 in place of the chart in Fig. 13. Compare these two tables and see how closely both calculations correspond. You will note some increased sizes with this table

Left is Table 14 which must be used to transfer sizes in round pipe into equivalent sizes for rectangular duct.

some variations here in comparison with data for chart Fig. 13, but Fig. 7 is more to be trusted as Fig. 13 is small and the sizes are difficult to read accurately. The use of Fig. 7 is advised where the duct diameters are small as in our problem.

Changing round ducts to equivalent rectangular ducts will be taken up in the next article.

## The Goelet Building

(Continued from page 20)

These triangular sections are welded behind to the sill and cap. The entire section is held by aluminum screws passed into the backup.

The top of these ornamental bands is quite wide and is, in fact, a flat coping cap for the masonry. The sections across the top are screwed through single locks in the ends of the sections.

There is another ornamental metal section at the top of the building. This consists of a horizontal dentil design made in extruded aluminum in sections as long as

could be conveniently handled. The ends again are screwed through single locks. The projection of these bands is just a trifle more than the space between bands, to give alternating horizontal bands of silvery metal and dark shadows.

With the exception of some extruded shapes in 51SW alloy, used in the double hung windows, either 43 or 43S alloy was used for all the ornamental aluminum work. These latter two alloys contain 5 per cent silicon and are employed extensively in metal work because of the sharpness and refinement of detail

possible and their high degree of resistance to atmospheric corrosion.

Wherever aluminum contacts other metals, bituminous paint was used as insulation.

In the entrance and lobby of the building aluminum inserts are employed in the marble. These inserts are held in place in the marble by pins embedded in the gypsum backup. The wainscoting in the interior is extruded aluminum. First floor grilles are cast in aluminum.

Throughout the inside especially designed lighting fixtures of modern design were used. These were fabricated from wrought aluminum shapes by the Robert Phillips Co.



# A Two-Branch Duct Square to Rectangle

By L. F. HYATT

Contributing Editor

THE accompanying illustration is of a two-way elbow sometimes used in heating and ventilating. The large end is square and the small openings are rectangular in shape.

Let  $A B C D$  and  $c d$  represent the front and side view of the elbow as it rests on the square end. The side of the square end is equal in length to the line  $A B$  found on the elevation view. After drawing the elevation view the arcs representing the curved edges of the arm are divided into spaces as shown. Now draw the plan view above the elevation and draw the miter line  $E F$  between the two prongs.

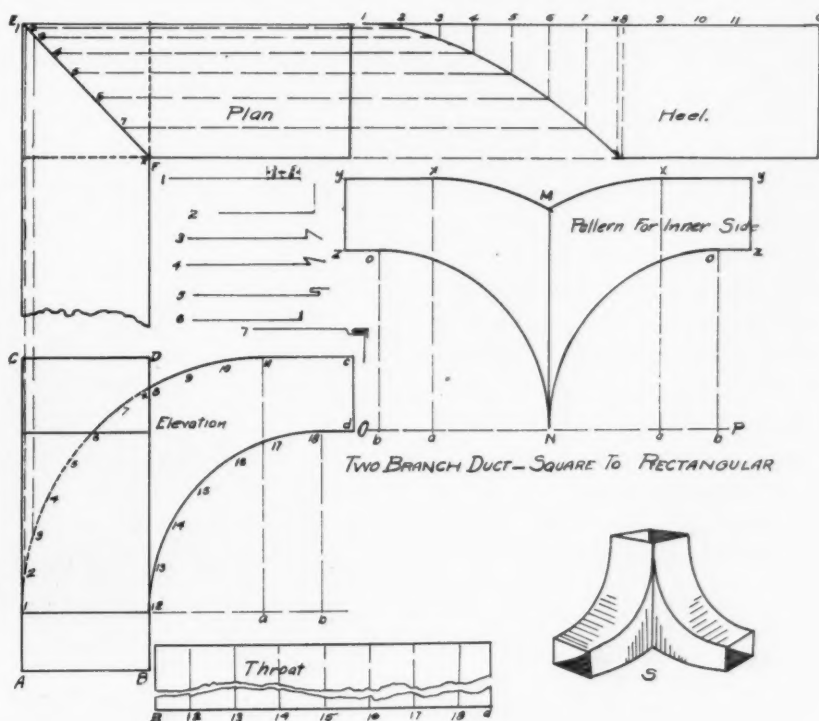
To begin the development, first draw the stretchout line  $I G$  and upon this line step off the distances  $I$  to  $c$  found on the elevation and drop lines of indefinite length from each of these points. Now draw the vertical lines from these points on the elevation locating like numbered points on the miter line  $E F$  on the plan view. Next from the points just located draw the horizontal lines intersecting the vertical lines previously dropped from the points on the stretchout line. Connect these points, describing the outline for the pattern for the heel.

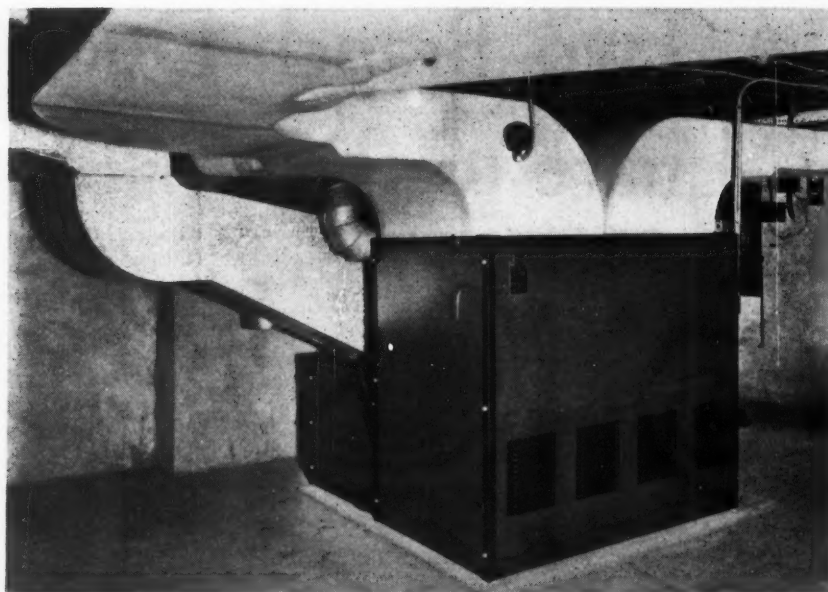
To begin the pattern for the inner side of the elbow first draw the line  $M N$  and at right angles to this draw the line  $O P$ . From point  $N$  step off the distances  $a$  to  $12$  and  $b$  to  $12$  and strike arcs as was done with the side elevation. From points  $x$  on the pattern step off the distance  $11$  to  $c$  found on the elevation locating points  $y$ . Drop a line from points  $y$ . Next draw the horizontal line from points  $o$  intersecting  $y$  at  $z$ , thus completing the pattern for the inner side.

Mr. Hyatt worked out the patterns for this commonly-used heating plant transition in response to a request from a reader. He believes that the patterns are simple and quick to make. However, we will welcome any patterns for the same transition which any reader believes are more practical or quicker. If you have a better pattern send a drawing with the explanation

Now draw the stretchout line for the throat  $B-d$  and upon this line step off the distances  $B-12, 13-14$ , etc., found on the elevation view.

Draw perpendicular lines from each of the points just stepped off. Upon the vertical line drawn from  $B$  step off the distance  $C-D$  found on the elevation view and draw the horizontal line describing the top edge of the pattern for the throat. To conserve space this pattern has been shown broken. In this case it is possible to use the curved arm of the elevation view as a pattern for the side of the two arms. No allowance is made for the seams. Steps in forming the Pittsburgh seam are shown. The small allowance shown in the 6th step is used on the pattern for the side and the pattern for the inner side, and the large allowance is used on throat and heel. An allowance for a lap is also made on the curved end of the pattern for the heel. The sketch at  $S$  shows the elbow assembled.





## This Gas-Fired Forced Air Plant Satisfactorily Uses 520 B. t. u. Gas

**T**HERE was completed in time for use last winter a gas fired, forced air heating system in Norristown, Penna., which has proved a revelation and object of deepest interest to home owners, officials of the gas company, architects and engineers of the vicinity.

This installation is in the home of Mr. F. R. Swanson. The system was designed by the Bryant Heater and Manufacturing Company engineering department and was installed by Smith and Yocum, Norristown sheet metal contractors.

The house was entirely new and was designed with considerable thought toward fuel conservation since the owner desired to burn gas. The walls of the house are 18-inch stone furred, and plastered on the inside. The plaster is applied to Insulate as a base. The slate roof is insulated with Celotex.

The equipment in the heating system consists of a 4-LF-73 Bryant furnace, with full operating controls, a centrifugal type blower, Reed filters, and Minneapolis-Honeywell Thermostat and Fur-

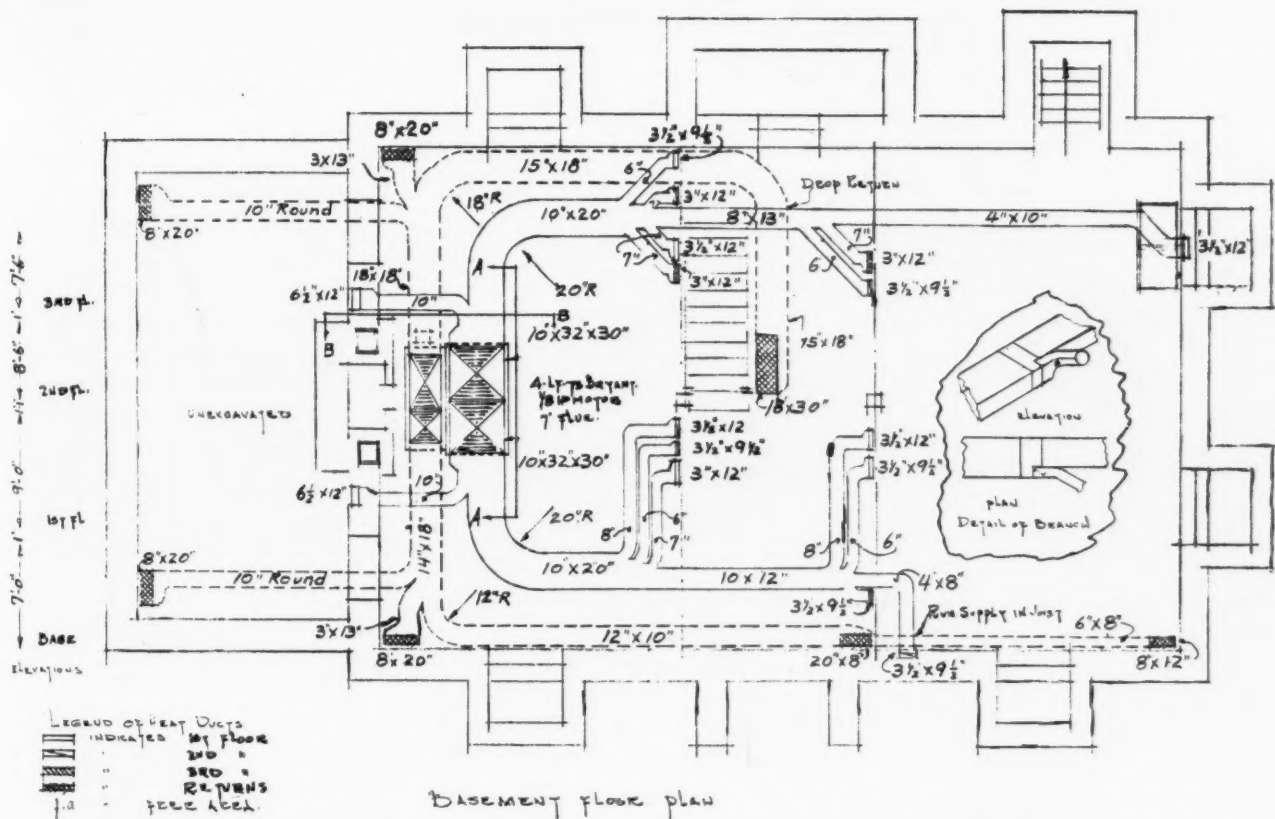
nacestat. The entire operation of the plant is automatic. Fuel supply and fan are operated by the temperature controls, humidification is maintained by an automatic humidifier.

There are a number of interesting points in the design of the system. The plan of the basement piping shows how the system was laid out and indicates points where special

protection or design were required. A register temperature of 135 degrees was assumed for design purposes and velocities were governed by this temperature. In the mains a velocity of 350 feet per minute was used and the ducts sized accordingly. The velocities in the risers varies from 350 feet per minute for first floor registers to 400 feet per minute for registers on the



The exterior of the house is stone. Celotex and Insulite were used for insulation on the interior. Note the glazed in porch which is heated



The basement plan and details show the piping system used. The supply is two-trunk with the return also two-trunk. The grouping of branches at the center partition is interesting as a problem in space conservation. The system is designed for straight mechanical supply with ducts sized to low velocities. The details show some interesting features of the branch takeoffs

second and third floors. Register velocities throughout the house were dropped to 300 feet per minute by means of diffuser sections.

The furnace is placed at one end of the basement with the blower against the wall. Two main supply ducts are taken off the top of the furnace, the area of the two mains equalling the area of the top of the furnace. These two mains sweep at an easy angle up against the first floor joists. The two mains are kept near outside walls with the branches coming off and passing across the center of the basement to the risers. This gave added head room.

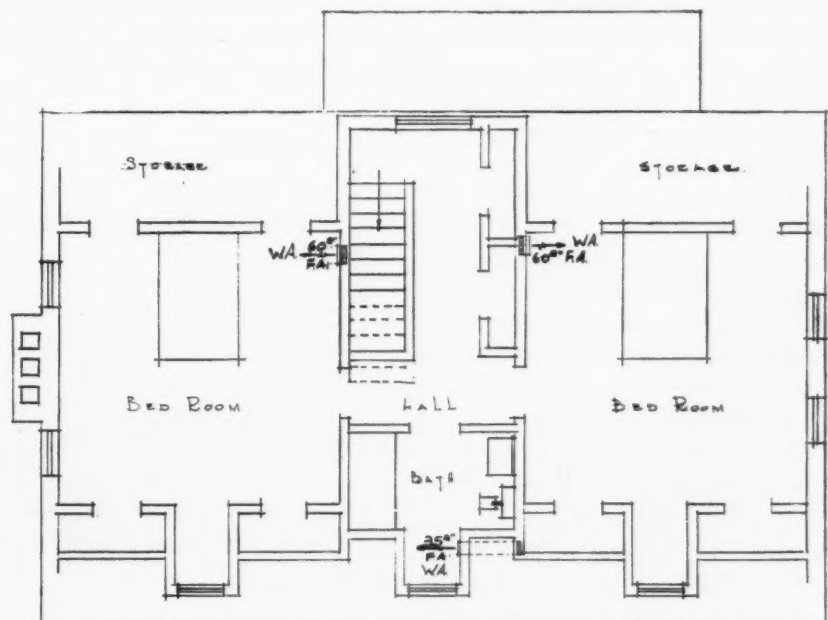
The basement plan shows that most of the branches feed through inside partitions, there being twelve risers along the two central partitions. The basement plan also shows a detail of the type of branch take-off used on this job. The branch is taken off as a rectangular to round transition continuing as round pipe to the boot. On this duct system, splitter dampers were used at all branches with the damper con-

trolled through a quadrant which was locked after the system was balanced.

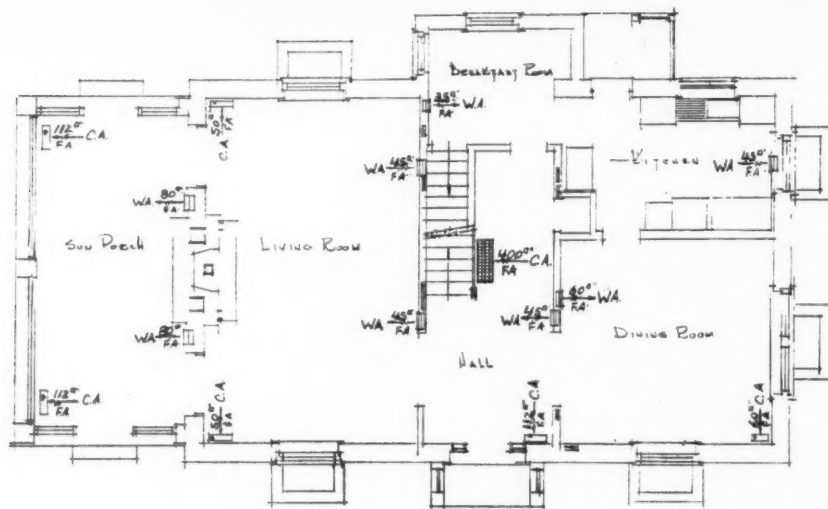
All connections between branches and risers were made with transitions as easy as building construction would permit.

The warm air ducts are all gal-

vanized iron not lighter than 24 gauge. These ducts are reinforced by 1/2-inch standing seams or where the duct is exceptionally wide by 1/2-inch angle iron braces. In several places cross breaking of the plates was used instead of the standing seams. None of the







FIRST FLOOR PLAN

On the first floor three changes were made after this plan was drawn. The cold air grilles in the living room and dining room were placed under the windows instead of in the corners. Note the centralization of supply

branches is lighter than 26-gauge iron. The joints of the round pipe sections are all beaded and lapped not less than 2 inches.

There are two types of risers used in the house. All risers through inside partitions are single wall pipe and are insulated with one layer of 12-pound asbestos paper. The double wall stacks used in outside walls are similarly wrapped.

The plan shows that one riser to a second floor bedroom and one riser to the first floor kitchen are in outside walls. These are double wall pipe. All riser pipe is held by lock seams on the sides and double locked seams on the ends.

One of the most interesting features of the basement installation is the care taken to make the furnace and the piping system as neat as possible. The furnace has a black crystalline finish. All the mains and branches are covered with two-ply air cell asbestos sewed on and then painted white. The return air ducts were left bare.

The room heating design is comparatively simple. On the first floor the huge glassed-in sun porch has a large heat loss and is heated by two supply registers located along the inside wall. Two cold air returns are taken from this room from floor grilles under outside corners. The living room also has two

supply registers on inside walls and two return air floor grilles. These show on the plan as being in the outside corners, but they were shifted to positions under the large side windows for greater effectiveness.

The breakfast room and kitchen each have one supply and no return. The stair hall has two supply registers and a large floor return air grille at the foot of the stairs. This grille serves as exhaust for the entire second floor for there is no direct return from the rooms above the first floor. The dining room has one supply and one return which is also under the side window

rather than in the outside corner as shown on the plan.

On the second floor there is one warm air register in each room, all but one being in inside partitions. The master bedroom has a private bath and a large dressing room. To heat these rooms a double head was used with the vertical riser feeding the bath register and a long branch passing under the floor supplying the outside wall register of the dressing room.

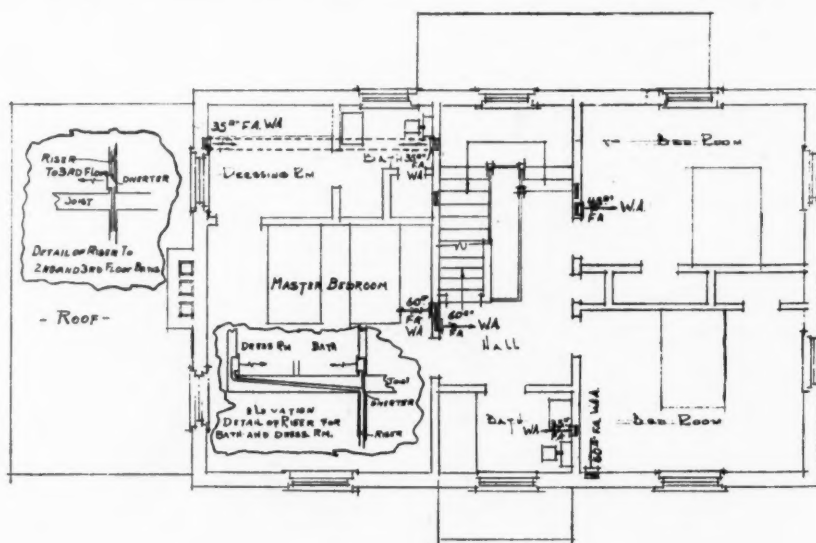
The baths on the second and third floors are supplied off a double head riser. A detail of this shows the use of a diverter to split the air stream.

Throughout the house warm air registers are located in the side wall two inches above the baseboard. The size of the register face was determined after the design wanted by the owner was selected to assure adequate free face area for the amount of air required for each room. The supply registers were installed in the prime coat which was unfinished oak. These registers are all semi-steel.

The fan in the system is installed with the usual shellacked canvas connections to the return air line. The fan is controlled from the bonnet and is set to turn on at 150 degrees and off at 110 degrees.

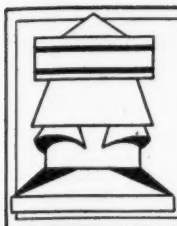
In all the return air ducts a wire

(Continued on page 34)



SECOND FLOOR PLAN

The interesting features of the second floor are the combination register and stack fittings shown. Note also the supply to the master bath and dressing room



# GRAVITY EXHAUST VENTILATION



## Ventilating a Service Garage

THE servicing of automobiles is being done more and more at the service rooms maintained in connection with sales rooms, and less and less in storage and repair garages. The larger service garage has become almost extinct in some localities, although the one-man service and repair shop still flourishes.

The same principles of ventilation apply to all types of garages, but the adaptation naturally varies with different layouts. The presence of the sales room in connection with the garage, and the comparatively small amount of storage space in comparison with both the repair floor space and the office space, makes some difference in the problem of distribution.

The vicious gases are the only element which need to be taken into consideration. Ventilation sufficient to remove the vicious gases will always bring in a supply of fresh air ample for all purposes.

The vicious gases are carbon monoxide, a deadly poisonous gas which is slightly lighter than air, its specific gravity being 0.97 as compared with air, and carbon dioxide, a less poisonous but still vicious gas, considerably heavier than air, whose specific gravity as compared with air is 1.53.

Carbon monoxide is the gas which causes death when present in large quantities. However, it is not present in large quantities in the ordinary automobile exhaust fumes. It is thrown off in large volume

By PAUL R. JORDAN\*

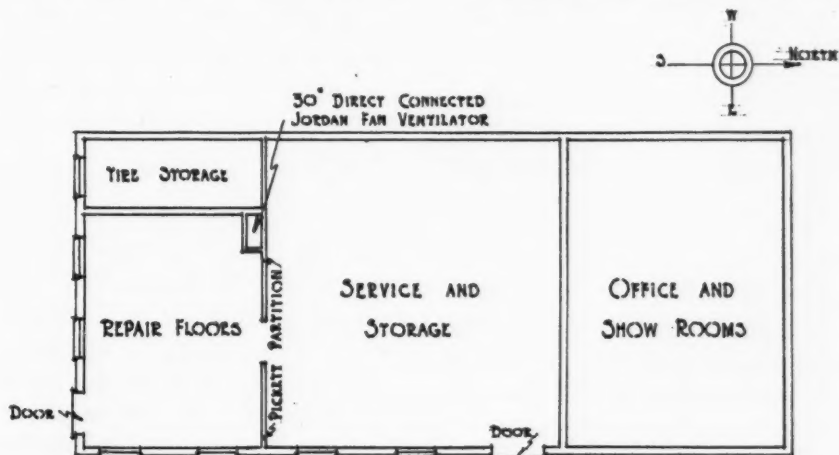
only when the mixture is unbalanced, containing too little oxygen and too much gasoline; in other words, when the mixture is too rich. It is so nearly the same weight as air that any kind of ventilation properly distributed will take care of it.

Carbon dioxide, which is more than one-half again as heavy as air, comes out of the exhaust pipe hot and rises with the other gases, but as soon as it cools, starts sinking to the floor. It is entirely possible then to have reasonably good ventilation up toward the ceiling which is ineffective lower down, and which leaves a very bad condition at the floor. As part of the work on cars is done by mechanics lying on the floor or in pits it is quite necessary that the floor be properly ventilated, and it is also necessary that

this be accomplished without chilling the floor too much.

The general principles as outlined above will apply to any garage. An application of these principles is very well illustrated by a ventilation installation made by the Gerlach Furnace Company, 2615 East Tenth Street, Indianapolis, at the sales and service room of Jones & Maley, Inc., 2421 East Washington Street. This building is about 80 feet wide by 160 feet long. The office occupies about one-third of this space at the front, while the service floor occupies most of the balance.

The firm's original interest in ventilation was based on complaints from both mechanics and the office force. The obnoxious gases penetrated the office and made the air disagreeable to the office force and to customers. These gases originated from the repair floors, and of course the condition in the rear



LAYOUT OF JONES & MALEY, INC.  
SALES AND SERVICE ROOMS

\*The Paul R. Jordan Co., Indianapolis, Indiana.

was much worse than that in the office.

The mechanics were subject to severe headaches, probably due to the presence of carbon dioxide. This gas seems to cause great discomfort in the way of splitting headaches and also nose, throat and eye irritation. Carbon monoxide is more deadly and is likely to make its presence known by the fainting

ice room, and counteracting any diffusion from the service room toward the office.

This service floor about 40 by 80 feet has a 15-foot ceiling, and with intakes on three sides gives rather better than an average condition. The 30-inch Jordan Direct Connected Fan Ventilator, rated at 5,625 cubic feet per minute, is pulling, according to anemometer tests,

with the results we are getting."

In checking over this job recently in order to ascertain what results and what benefits they were getting through this simple system of ventilation there were two things attracted attention. The first of these was that the fan was shut off during the summer. This proves that the need for ventilation is a winter requirement solely, and therefore emphasizes the necessity for handling the ventilation in such a way as to conserve heat. The other thing was the presence of three 20-inch shop-made ventilators installed on the roof over the repair floors and opening directly into the room. These three ventilators were characterized as worthless.

These shop-made ventilators are dampered, and the dampers are kept closed during the winter. The service room is heated with four unit heaters, swung about 4 feet below the roof. Mr. Webb says this heating is satisfactory and that the installation by Gerlach has had no adverse effect on the heating situation.

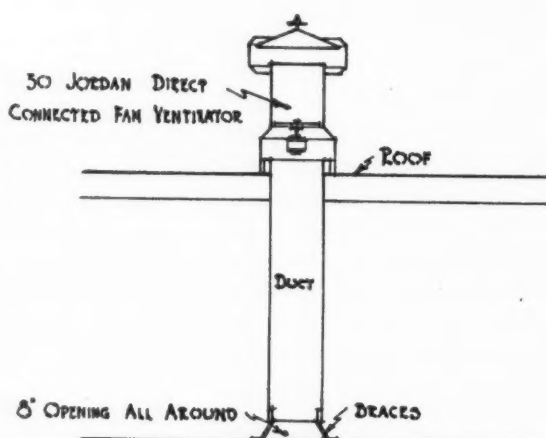
Possibly another check on the amount of ventilation furnished by this installation can be had from the fact that there are about an average of 12 cars being serviced at all times. This gives around 600 cubic feet of air per minute for each serviced car. This is not meant as a basis for figuring, but merely as a check.

Due to the weight of gases to be handled, garage ventilation can be taken care of more surely with a fan than with gravity. The best type of fan for this work is the fan ventilator, due to the fact that it can be installed at any desired point on the roof, and to the further fact that there is no wind interference with the fan action.

The fan should always be connected with a duct running to within a few inches of the floor in garage ventilation, both for heat conservation and for eliminating any pocketing of heavy gases. This all means that in good garage ventilation, you can't get away from the sheet metal contractor.

### SECTION OF GERLACH INSTALLATION

This illustration and the one on the facing page show details of a fan ventilator system designed to remove harmful gases from garages. The most important feature is the method used to get the gases off the floor



of mechanics, or even by their death, but not by bodily discomfort. In this particular instance there were no mechanics carried out, but many of them went home regularly with headaches. This was the condition which obtained before Gerlach made his installation.

There are windows and doors across the back of the room and also along the east side. There are, of course, ample doors and windows in the office, which is at the north end. The west wall is entirely blank. Under these circumstances it was advisable to place the exhaust at the west side. See Figure 1.

Most of the repairing is done in the rear 40 feet. The exhaust therefore was placed about 40 feet from the rear so that it would draw the fumes to it from the repair floor, intercepting them before they had an opportunity to diffuse into the front portion of the building. This naturally created an area of low pressure within the entire service room causing a constant flow of air from the office toward the serv-

7,200 cubic feet of air per minute. This amount of ventilation seems to be very satisfactory to them. H. E. Webb, service manager of Jones & Maley, states that he hasn't carried home a headache since the installation of the system. He further says, "We are tickled to death

**From now on until the end of cold weather, ventilation will be important to owners of service and repair garages. Unless some form of ventilation is used, headaches, sickness or worse will reduce the efficiency of garage mechanics. Ventilation is cheap accident and sickness insurance. If the garages in your town are not ventilated, the principles of good garage ventilation set forth in this article can be used as a part of your sales talk**



# NEW ITEMS and NEWS ITEMS

## From and about the Manufacturers and Jobbers

### Beg Your Pardon!

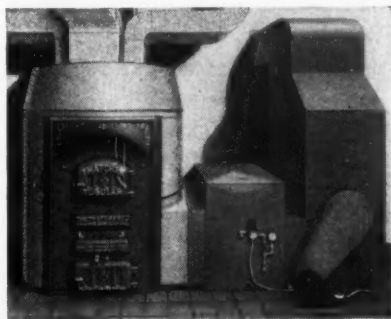
On page 23 of the October 12th, issue of AMERICAN ARTISAN we showed a page of pictures showing a forced air heating system installed in the Maryland Inn, Omaha, Nebraska. This installation was made by Frank J. Merwald, Omaha. Mr. Merwald writes that among the pictures the one showing the furnace is the wrong picture since the furnace is a Torrid Zone and not the one shown. We don't know how the error was made, but it was and we wish to correct it.

### The Thatcher Weather Producer Announced

The Thatcher Company, Newark, N. J., announce a new heating unit to be known as the "Weather Producer."

There will be three types of equipment used in this line. Type A comprises a Thatcher Tubular furnace, a blower type fan and a washer. All units are designed to work in unison and are also designed for connection into one heating plant. This series can be had in several sizes—from 403 square inches of pipe area to 1320 inches.

Type B has the same furnace, a blower type fan and a filter. This line



is also furnished in the same sizes as Type A and is for installations where the owner does not wish to buy or use a washer.

Type C comes in the same sizes as the other types and consists of the Thatcher furnace, blower type fan, filter and washer. This unit is recommended for the buyer who wants everything.

The company is issuing a descriptive folder showing the various units and describing them. Copies may be had from the main office.

### New Niehaus Furnace Repair Co. Catalogue

The Niehaus Furnace Repair Co., Second and Main Streets, Cincinnati, Ohio, has just issued a new furnace repair catalogue known as number 3. The handsome new catalogue contains 200 pages of trade data on repairs for furnaces.

Some idea of the scope of the catalogue may be had from the fact that each page contains ten or more furnaces with a list showing each part and the price of each item.

Clifford J. Niehaus, president of the



Annual Conference on Bituminous Coal—November 16-21, at Pittsburgh, Penna.

National Warm Air Heating Association—December 3, 4 and 5, 1931, at Mayflower Hotel, Washington, D. C. Managing Director, Allen W. Williams, A. I. U. Building, Columbus, Ohio.

American Society of Heating and Ventilating Engineers—January 25-28, 1932, at Cleveland, Ohio. Secretary, A. V. Hutchinson, 51 Madison Avenue, New York City.

National Association Sheet Metal Contractors, United Roofing Contractors, Roofing Division of National Slate Association—January 25-28, at Brown Hotel, Louisville, Kentucky. W. C. Markle, secretary-treasurer, 1604 Law and Finance Building, Pittsburgh, Penna.

International Heating and Ventilating Exposition—January 25-29, 1932, at Cleveland Auditorium, Cleveland, Ohio. Manager, Charles F. Roth, International Exposition Company, Grand Central Palace, New York City.

American Society of Refrigeration Engineers—January 25-29, 1932, at Hotel Cleveland, Cleveland, Ohio. Secretary, David L. Fiske, 37 West 39th Street, New York City.

Sheet Metal Contractors' Association of Wisconsin—February 1-2, New Pfister Hotel, Milwaukee, Wisconsin. Paul L. Biersach, secretary, 418 Metropolitan Block, Milwaukee, Wis.

company, writes that one feature of his company's service is a printed booklet telling how to solicit repair business, how to order parts and how to figure repair jobs. Complete information on this service may be had by writing to the company. Mr. Niehaus, we know, has been in the business a long time and the booklet is the result of his experience.

The repair parts listed are all made from the company's own patterns, made in their own foundry, of first class material, and are guaranteed to fit the furnace or heater for which they are intended.

A copy of this catalogue will be mailed to any dealer interested.

### G. E. Totten Becomes Republic Steel Manager

George E. Totten has been appointed Manager of Sales of the Tin Plate Division of Republic Steel Corporation with headquarters in the general offices of the corporation in Youngstown, Ohio, according to an announcement by N. J. Clarke, Vice President in Charge of Sales.

### Timken-Detroit and Silent Automatic Merge

Arrangements have been made for the consolidation of the Silent Automatic Corporation with the Timken-Detroit Company, both manufacturers of oil burner equipment at Detroit. The merged organization will be known as the Timken Silent Automatic Company and will be a subsidiary of the Timken-Detroit Axle Company.

The two companies will continue as separate units during the rest of this year. Shortly after January 1, 1932, the general offices and all manufacturing activities will be combined at the plant of the present Timken-Detroit Company.

Fred Glover will be president of Timken Silent Automatic, with Halde-man Finnie as vice-president and general manager. Both at present are officials of Timken-Detroit. Walter F. Tant, president of Silent Automatic, will have a substantial financial interest in the new company and will assist in planning sales policies.

E. V. Walsh, general sales manager of Timken-Detroit, will be in charge of sales for Timken Silent Automatic.

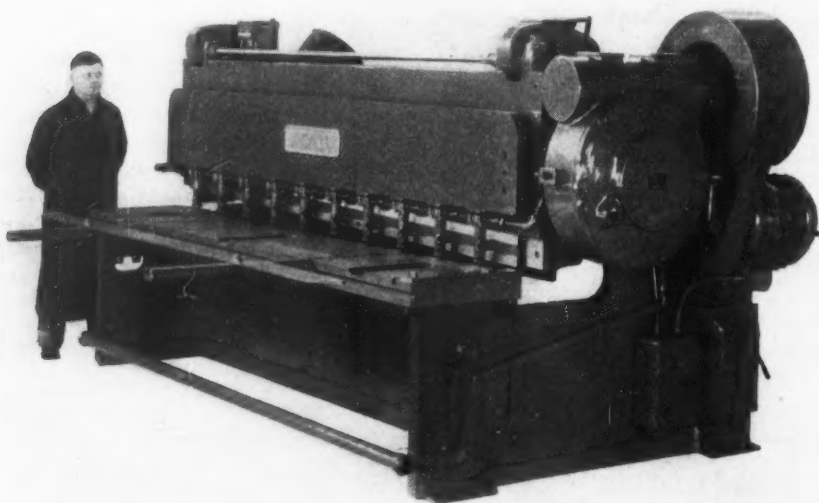
### New All Steel Squaring and Slitting Shear with Hydraulic Holddowns

A new line of All Steel Squaring Shears with hydraulic holddowns is announced by The Cincinnati Shaper Company, Cincinnati, Ohio.

Unusually high speeds are claimed for these Steel Squaring Shears; for

parallel in order to compensate for the side movement of the sheets.

This accuracy is due to several factors, the most important of which are the hydraulic holddowns, the low rack, and the rigidity of the all steel con-



example, the 3/16 in.—10 ft. and 12 ft. Shears operate at sixty strokes per minute.

In combination with the speed an exceptional degree of accuracy is offered. They cut straight, parallel and square accurately. Straight and parallel cuts and square sheets are secured without setting the squaring arm out of square and the back gauge out of

struction. The hydraulic holddowns deliver great clamping pressures to prevent sheet slippage. They also deliver a uniform pressure regardless of variations in the thickness of the sheets. The low rack or shear angle (5.16 in. per foot on the 3/8 in.—12 ft. Shear) greatly reduces distortion.

Full details can be had by addressing the company.

### American Air Filter Company Catalogues

This department has recently received copies of the American Air Filter Company's bulletin number 16 and the general catalogue. This bulletin describes and shows the "Airmat" dry filter, tells what this filter will do, how it is maintained, what effect it has on a forced air system.

The leaflet explains how to calculate the resistance due to the filter and how to install the unit.

Readers will remember that the present company resulted from the incorporation of three older companies—MidWest, Reed and National. As a result the general catalogue shows just about all there is in the way of panel filters, unit filters, dust arresters, dry filters, mat filters and processed filters.

All these products are completely described, illustrated by drawings and photographs from actual installations and completely detailed in the catalogue. Copies can be secured from the company. The address is 201 Central Avenue, Louisville, Kentucky.

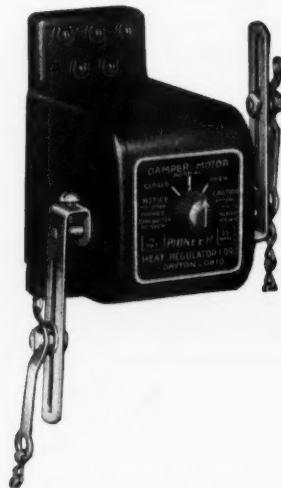
### Pioneer Announces Model Changes

What is claimed to be one of the most important advancements in the design of heat regulators that has been made in recent years is the signal light which The



Pioneer Heat Regulator Corp. are emphasizing in their enlarged sales program. This device is a small red bulb on the thermostat which lights when the draft is opened and remains lit until it is closed.

The housing of both the thermostat and the motor is made of "Mecolite," a new bakelite material. The thermostats have



a very attractive grained finish, while the motor is plain in color.

The motor is also very compact and powerful. It is an induction type motor giving no radio interference whatever.

The Pioneer company states that they have increased their sales force in anticipation of increased business during the next few months.

### Republic Announces Toncan Iron Tin Plate

Republic Steel Corporation, Youngstown, Ohio, announces a new product which has been developed by Republic research workers—Toncan Iron Tin Plate.

Toncan Iron Tin Plate will supply those branches of industry particularly identified with canning and food products with the answer to a troublesome problem—a rust-resisting tin plate. Possessing the same base analysis as Toncan Copper Molybdenum Iron, Toncan Iron Tin Plate is endowed with the rust and corrosion-resistance characteristic of Toncan Iron. This enables it to be used in many cases where ordinary tin plate would fail.

Toncan Iron Tin Plate is the only tin plate with a rust-resisting base on the market today. It can be supplied in all base weights and sizes. It is especially adapted for cans for packing strawberries, apple butter and other fruits and fruit products of acid nature.

# HEALTH AIR

Warms in Winter—Cools in Summer

BLOWERS      AIR WASHERS

Low Priced      Efficient



## COMPLETE AIR CONDITIONING IN A SINGLE UNIT



### The HEALTH AIR CONDITIONER

A product combining into one compact unit, air washer, blower and humidifier. In summer it cools and in winter it circulates pure, humidified, washed air throughout the house. It equalizes heat within three degrees between ceiling and floor.

GET OUR PROPOSITION

**HEALTH-AIR SYSTEMS**

1105 North Main St.      Ann Arbor, Mich.

# Just off the press



## Mail the Coupon for Your Copy

**N**OT just another catalog, but a real sales help to every furnace dealer or sheet metal contractor who is installing or considering air conditioning systems.

Here is a book that will win the confidence of the architect, builder and owner. It embodies years of experience—months of careful preparation—covers the subject thoroughly and completely. Facts and figures are given to prove that the Hess Indoor Climate Control System is the finest equipment yet developed for year 'round comfort in the modern home—at a price within the reach of all.

### Authorized Hess Dealer Has Big Possibilities

When you receive this book, you will appreciate that the Hess Dealership offers attractive possibilities in this higher—and profitable—field of air conditioning. It illustrates the kind of business that you have often hoped for, and will make more profit for you than you ever thought was possible.

**Be the first in your city to act. Mail  
the coupon NOW!**

HESS WARMING & VENTILATING COMPANY  
1201-1211 S. Western Ave., Chicago

Send me your new book on air conditioning right away.

Name.....

Address.....

I am a Furnace Dealer ☐ Sheet Metal Contractor ☐

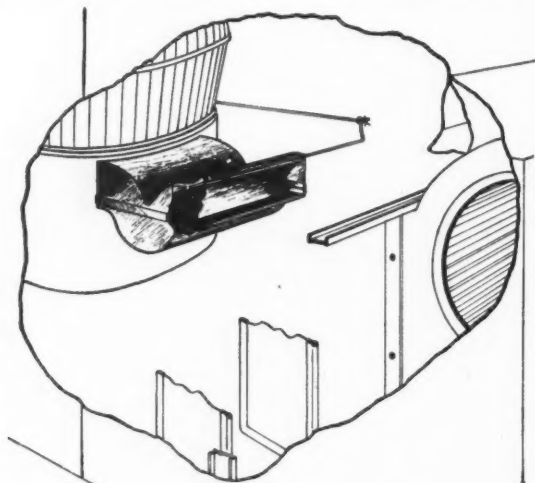
Mention AMERICAN ARTISAN in your reply—Thank you!



### J. C. Miles Announces Forced Draft Attachment

The Miles Forced Draft is announced, an attachment to be used in connection with fan systems.

This attachment is connected to the ash pan directly under the grate and



so arranged that the blast from the fan forces air through the fire. The unit is automatic in that a butterfly valve automatically closes the opening and shuts off all draft when the fan is off. It has an adjustment so that any desired volume of air may be supplied. It also has an arrangement so that the

valve may be held closed and in operation but that it cannot be opened except by the air pressure.

One of the outstanding advantages of this unit is that the cheapest grade of slack, run of mine, or pea coal may be burned by using the fan. One hun-

extensive line have been chosen carefully to illustrate the features of each unit. Each of the furnaces is shown as cut away so that the dealer can point out the features in his sales talk.

In addition the specifications of each unit are given in a well tabulated table.

Copies of the folder may be had from the company.

### F. H. Lawson Co., Announces Personnel Changes

J. A. Buhr, Vice President of the F. H. Lawson Company, Cincinnati, Ohio, recently announced two important appointments in the company's commercial organization. Earl Campbell, a recent addition to the Sales staff, has been made manager of the company's Jobbing Department, while E. G. Harvey has been placed in charge of specialty sales in the Cincinnati District.

Mr. Campbell formerly was a member of the Follansbee organization, where he served as manager of jobbing departments in branches located at Louisville, Kentucky, Cincinnati, Ohio, and Detroit, Mich. Harvey who has been a member of the Lawson organization for some time, will concentrate his attention on the management of specialty sales in the Cincinnati territory.

The F. H. Lawson Company is now in its 115th year, having been founded in 1816 by Thomas Lawson, "iron monger, brazier, and metal worker."

### Lorin W. Smith Joins Penn Heat Control Co.

The Penn Heat Control Company of Philadelphia, Pa., a subsidiary of the General Electric Company, announces the appointment of Lorin W. Smith, Jr., to their organization.

Mr. Smith is well known throughout the entire heating industry, as he has been associated with this and allied branches of the industry for some years.

A national reputation has been gained by Mr. Smith through his work in the coal and allied industries. He has been an important factor in the awakening of these different industries to the fact that the era of automatic heating is not only here, but is here to stay, and that new methods of merchandising of automatic heating must be used.

Mr. Smith's most recent contribution to these industries has been his activities in the formation of the "Committee of Ten"—for the coal and heating industries. Mr. Smith is National Secretary of that committee.

Effective November first, he will have offices with the General Electric Company at both 120 Broadway, New York City, and 140 Federal Street, Boston, Mass.

### New Barnes Metal Products Co. Catalogue

Barnes Metal Products Company, 4425 W. Sixteenth Street, Chicago, have ready for mailing a new catalogue showing the company's complete line of conductor pipe, elbows, eaves trough and fittings.

Throughout the catalogue use has been made of photographs and drawings showing the various items. Complete and corrected prices of all items are also given. The catalogue completely describes the many exclusive features built into each item.

Contractors using Barnes' products or contractors requiring such products are invited to write for a copy of this catalogue.

### Round Oak Issues New Furnace Folder

The Round Oak Furnace Company, Dowagiac, Mich., will mail to interested dealers their new folder showing features of their cast and steel coal burning furnaces and their new gas furnace.

The folder is handsomely colored to make the features told about appealing to the owner wishing to buy a furnace. The folder is printed in four colors. Various items of the company's

### A GAS FIRED PLANT

(Continued from page 28)

mesh screen was placed near the grille to keep any dirt near the register. In some places where headroom permitted a cleanout door was used in place of this screen.

The plant operated during most of the heating season of last winter to the owner's entire satisfaction. As a result of the excellent service several other installations were sold.

Incidentally the furnace uses manufactured gas of a 520 B.t.u. content and last winter the heating cost was \$318. This was \$18 more than the cost estimated, but is undoubtedly accounted for by the damp condition of the new house. It is anticipated that this year's cost will be well within the \$300 estimate for fuel.

The  
May  
Fie  
beger  
Com  
pany  
New  
ark  
Ohio

## A SINGLE UNIT SALE

### The AKRON AIR BLAST

#### A Complete AIR CONDITIONING UNIT

**A**RE you able to supply Air Conditioning as a single unit? Can you show your prospects a complete plant which will give 100% Air Conditioning, one which requires no extras, and can be readily installed?

**I**F you want to do just this, then investigate the May Fieberger Line, especially the Akron Air Blast, the Air Conditioning Unit DeLuxe.

**The May-Fieberger Co.  
Newark, Ohio**

# HANDY PIPE

Is Made to Outlast  
the Buildings It  
Goes Into!



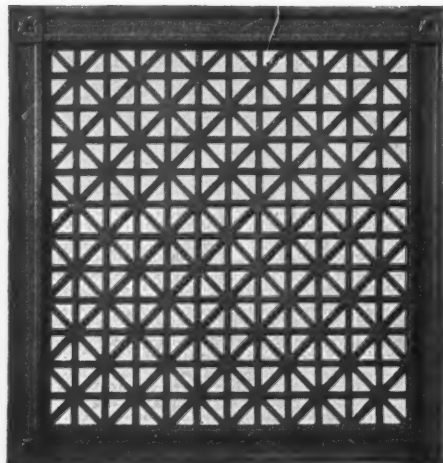
It Insures Fast  
Work, Profits and  
Pleased Custom-  
ers to You.

▼  
We ship your orders  
the day they come in.

▼  
**F. Meyer & Bro. Co.**  
Peoria, Illinois

# Perforated Metals...

## *for every purpose*



No matter what the uses we can perforate metal to meet the purpose. In Public Buildings, Churches, Schools, Factories and homes our grilles are dominant. There are hundreds of designs to select from.

### **"GRILFRAME"**

Enhances the beauty of any grille by the addition of a border frame of steel. You can do it with "Grilframe." Agents everywhere.

The H. & K. Line consists of perforated sheets and a full selection of Guard accessories.

*WRITE FOR CATALOG AND QUOTATIONS. Perforated metal for every purpose*

**- SAFETY GUARDS -**

## **THE HARRINGTON & KING PERFORATING CO.**

5649 Fillmore Street

New York Office, 114 Liberty Street

Chicago, Ill., U. S. A.

## **FURNACE REPAIRS**

Always try Peerless first. Get our catalog and compare prices before you order.

Indianapolis, within a few miles of our Population's Center, affords quicker shipments through its great network of steam and electric railroads, airships, and truck lines leading in all directions.

### **SAVE MONEY**

## **The Peerless Foundry Company**

*Manufacturers of Furnace and Boiler Repairs  
and Gray Iron Castings*

**1845-1935 Ludlow Avenue**

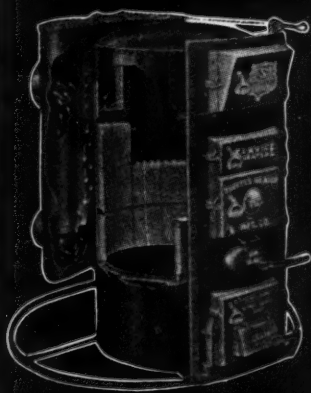
**Indianapolis, Indiana**

*Say you saw it in AMERICAN ARTISAN—Thank you!*



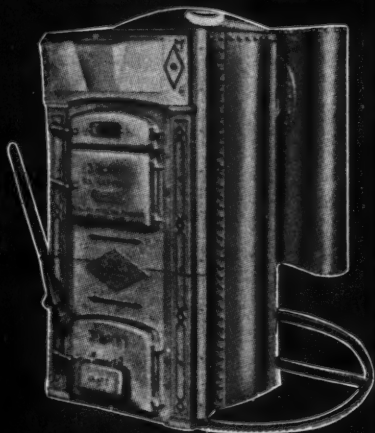


It is the MIDLAND IDEAL not only to make today's achievements superior to those of yesterday's—but to retain at all times the MIDLAND REPUTATION for quality superiority.



SUCCESS  
HEATER

EL CAPITAN  
FURNACE



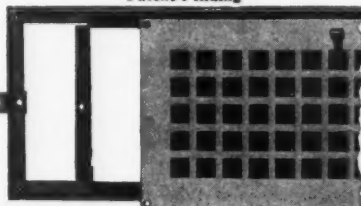
**MIDLAND FURNACE CO.**  
COLUMBUS, OHIO      DES MOINES, IOWA

## On the Job with the Registers to meet the New Trend in Warm Air Heating

**H & C** has again demonstrated its leadership by being the first and only manufacturer to offer a complete line of Air Conditioning Registers and Return Air Intakes—evidence of the fact that the H & C organization is constantly on its toes, analyzing the trends in Warm Air Heating, which in turn is the reason why the H & C Line is always up to the minute—the one line in which you can absolutely rely on finding the most suitable register for every requirement.

**It PAYS to standardize on H & C. Leading jobbers carry complete stocks.**

Patent Pending

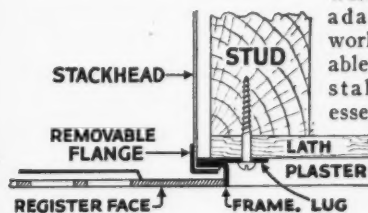


Air-Conditioning Sidewall Register No. 3351

Many advantages are incorporated in our new 3-piece Sidewall Air Conditioning Registers. In addition to being free from leaks, rattles and possible valve interference, each installation is exceptionally secure, neat and quickly made. (Note the sketch below.) The frame and removable flange are installed when the stackhead is placed—the plaster is brought flush with the frame, providing a very pleasing effect—and any time after plastering the job is completed in just a jiffy by screwing the face in position. The removable flange automatically smooths out all unevenness in the stackhead and makes an absolutely tight contact between stackhead and frame.

This register and our No. 3151 Baseboard Register in which essentially the same construction is employed, are ideal for new house work.

Our one-piece line designed primarily for old house work is also perfectly adaptable for new work where removable face and flush installations are not essential.



Return Air Intakes to match are included in the line.

WROUGHT  
STEEL



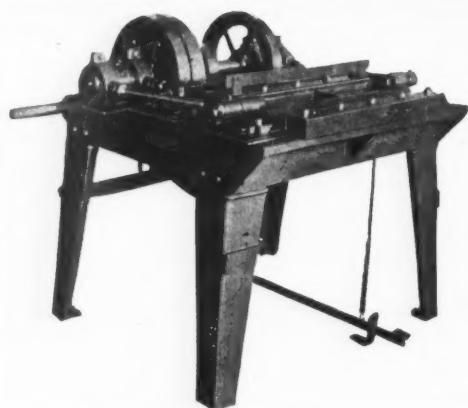
WARM AIR  
REGISTERS

**HART & COOLEY MFG. CO.**  
61 WEST KINZIE STREET, CHICAGO

New York, 101 Park Ave.  
Boston, 75 Portland St.

Philadelphia, 1600 Arch St.  
New Britain, Conn.

Wm. Highton & Sons Division, Nashua, N. H.  
Factories in Holland, Mich.; New Britain, Conn.; Nashua, N. H.  
Registers for all purposes. Also a complete line of perforated and cast ornamental grilles, furnace regulators, dampers, pulleys, chain, and the H & C Automatic Heat Control.

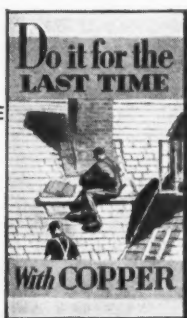


## Yoder L-300 Stove Pipe Seaming Machine

THIS machine is built with a combination set of 3 pairs of dies, and completely forms the edges of Stove Pipe Sheets, ready for seaming. The bed is of ample proportions, cast in one piece, including all bearings. The shafts are large and all parts sufficiently heavy to permit of rapid operation and produce accurate work.

The dies are accessible, permitting of quick and easy adjustment and are of sufficient length to seam 31" sheets, of No. 22 gauge or lighter. Curling rolls can be attached to frame of the machine, permitting seaming and curling pipe with one handling. Net weight—2700 pounds.

**THE YODER COMPANY**  
W. 55 ST. and WALWORTH AVE.  
CLEVELAND, OHIO  
PLATE AND SHEET METAL MACHINERY SPECIALISTS



**"Do it  
for the last time  
with COPPER"**

is the title of this new selling help prepared by The American Brass Co. to help contractors secure more Anaconda Copper jobs. This folder, and others like it, are supplied free of charge and in reasonable quantities to contractors using Anaconda Copper—specially imprinted with their firm names and addresses. Write today for a supply. The American Brass Co., General Offices: Waterbury, Conn.

**ANACONDA COPPER**

**SILENTAIR**  
**AIR CONDITIONING  
UNITS**

The tremendous success of SILENTAIR AIR CONDITIONING UNITS results, in no small measure, from the fact that they are **MATCHED UNITS**. Easily installed with any warm air furnace they bring splendid profit to dealers and comfort and economy to home owners. Write for descriptive literature.

**A. GEHRI & CO., INC.**  
Factory & Main Office - - - Tacoma, Washington  
Eastern Sales Office & Warehouse, Baltimore Trust Bldg., Baltimore

## GILTEDGE

The  
FURNACE  
with a  
GOOD NAME

## Living Up to a Pledge . . .

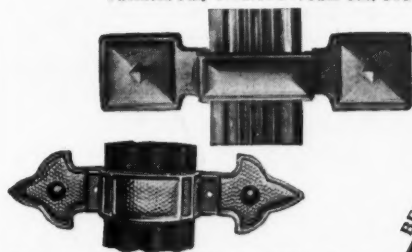
Giltedge dealers everywhere will vouch for the pledge made by us. The reorganized and refinanced company, **LIKE THE GILTEDGE**, is making good.

**SCHWAB FURNACE & MFG. CO., CEDAR GROVE, WIS.**  
Milwaukee Office, 522 Cherry Street

*Write for our catalog  
and dealers' Profit-sharing proposition*

Say you saw it in AMERICAN ARTISAN—Thank you!

**RIVAL STRAP CORP.** 308 WEST 20th ST.  
NEW YORK, N. Y.

**THE RIVAL AND FITRITE**
**One-Piece Ornamental Leader Straps**  
Patented July 10th, 1928; Jan. 6th, 1931


Made in six styles. Write for folder showing complete line and sizes.  
**STRAPS SOLD THRU JOBBERS ONLY**

**BEWARE OF IMITATIONS**



**"FITRITE"**  
Mop Heads & Staples  
Malleable Iron

Write Dept. "A" for full details and prices

**"FITRITE" SKYLIGHT GEARING**


Iron or Bronze  $\frac{3}{4}$ "- $\frac{1}{2}$ " and 1" sizes  
Made also for chain operation



**"Fitrite" Adjustable**  
**PIPE SNOW GUARDS**  
Galvanized Iron or Bronze



**"FITRITE"**  
**Bronze**  
**ROOF**  
**STRAINERS**

3 Types. For Roofs having inside cast iron leader. Type "X" (illustrated) also made in Mal. Iron



**"FITRITE" Bronze**  
**BEEHIVE**  
**STRAINERS**  
For Round Leaders  
3"-4"-5"-6"-7"-8" Diameter

**DAVID LEVOW** 308 WEST 20th ST.  
NEW YORK

# Furblo

—is BREAKING  
VOLUME RECORDS

Shipments of Furblo, even under present conditions, are exceeding last year's excellent volume.

Why?—Well, there are many reasons, but most important of all, we feel, is the fact that dealers have found out Furblo does what we say it will. Performance data is absolutely guaranteed to be as stated, and it is not necessary to install a larger blower to be sure of a correct delivery of air.

Would you like more information? Write us today.

**LAKESIDE CO., Hermansville, Michigan**  
Makers of Lakeside Ventilating Systems

## The PIONEER WEATHERKING

**"The 5 point air conditioning unit"**

**1. HEALTH-GIVING**

Will maintain up to 50 per cent relative humidity.



**2. COMFORT-PROVIDING**

Will equalize temperatures between floor and ceilings.

**3. ECONOMIC IN OPERATION**

Will consume but 3 gallons of water per hour at 30 lbs. pressure. Operates with  $\frac{1}{4}$  hp. motor.

**4. EFFICIENT IN OPERATION**

Will remove 98 per cent of all dust, soot, smoke and other free solid matter from the air.

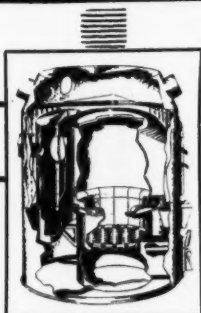
**5. ORIGINAL**

Is the only self-contained circulator, air washer, humidifier and de-humidifier for warm-air furnaces.

*We guarantee that no entrained water will come into contact with the furnace casting.*

*For prices and detailed information and full description write*

**THE MENOMINEE AIR WASHER CO.**  
Menominee, Michigan



## SLATE WON'T BURN but X-L-ALL Rugged Steel WARM AIR FURNACES

not only insure complete consumption of fuel but permit the use of cheaper grades with entire satisfaction. You can easily convince a prospect of the economy of owning an X-L-ALL. Extra large casings, lined with corrugated black iron; a big straight firepot; and an extra large heat trap, entirely within the casing, has the effect of a second furnace, reemploying heat otherwise wasted up the chimney and saving much fuel. The oversize combustion chamber gains the same efficiency with a 20"-grate others do with a 24"-size, allowing ample room for expanding gases, thus assuring complete fuel consumption, provides a reserve of heat for quick demand, and prevents "hot spots," burning out or buckling.

Learn of the various other exclusive features of the X-L-ALL and prepare to get into the big profit class by sending today for the X-L-ALL Furnace Book and Dealer Proposition.

**Deshler Foundry & Machine Works**  
140-142 S. East Ave., Deshler, Ohio  
Please send me without obligation  
.....The X-L-ALL Furnace Book.  
.....The X-L-ALL Dealer Proposition.

Name.....  
Street.....  
City..... A.A.

Mention **AMERICAN ARTISAN** in your reply—Thank you!

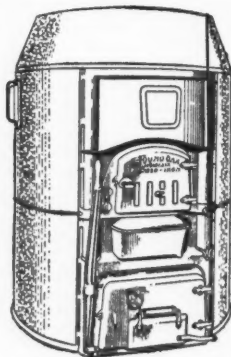


Recognized Warm-Air  
Furnaces such as

## ROUND OAKS

are profit makers  
for you

Now's the time to ask us  
for full information



ROUND OAK FURNACE CO., Dowagiac, Mich.

## MONCRIEF

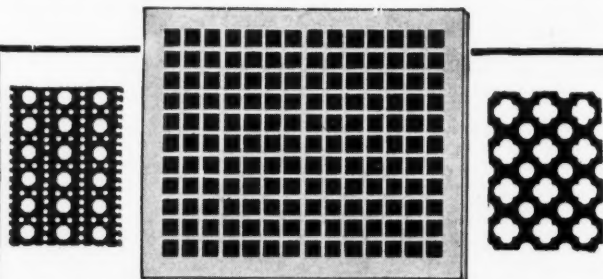
### Pipe and Fittings



We supply everything  
used on a warm air heat-  
ing job. Send for our big  
Pipe and Fittings Book.

The Henry Furnace &  
Foundry Co.

3471 East 49th Street  
Cleveland, Ohio



## PERFORATED METAL GRILLES

OF EVERY TYPE

SQUARE PERFORATIONS—IMITATION CANE and OTHER DESIGNS  
For Ventilating Outlets, Warm or Cold Air Vents, Radiator Covers, etc.  
Made to your specifications—in Steel, Brass, Bronze, etc.

All shapes—sizes and gauges—with screw holes if desired.

Send Us Your Specifications—Prompt Shipment

Attractive Prices

CHICAGO PERFORATING COMPANY

2444 West 24th Place

Chicago, Illinois



The "Torrid" Furnace  
is designed to give a  
tremendous amount of  
heat, much more than  
that furnished by the  
ordinary tinner's fur-  
nace.

A fuel saver and gen-  
erating machine of the  
finest quality made at  
the price.

GEO. W. DIENER MFG. CO.

404 North Monticello Ave.

Chicago

A CATALOG  
YOU SHOULD  
HAVE -



WRITE  
FOR  
IT

LEADING  
JOBBER  
EVERYWHERE  
RECOMMEND—

## B-B PRODUCTS

Mitres, conductor pipe, hang-  
ers, eaves trough, caps, out-  
lets, pipe hooks and fasteners

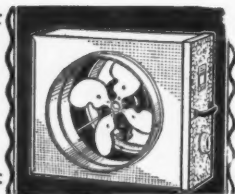
BERGER BROTHERS CO.  
229-31 Arch St. Philadelphia

## File This Copy

When you have finished reading this  
issue of AMERICAN ARTISAN, pass it  
on to others in your organization,  
marking the articles in which they  
should be particularly interested.

Then file it for future reference. You  
never know when you will encounter  
a problem in your business that is  
covered in this very issue.

Efficient  
Powerful  
Automatic



Easy to  
Sell  
Easy to  
Install

Write To-day for Full Information and  
Name of Nearest Jobber

**A-C**  
Thermostatically  
Controlled  
Automatic  
HEAT BOOSTER

A-C MANUFACTURING COMPANY

417 SHERMAN AVENUE

PONTIAC, ILLINOIS

You can now heat with fresh air as economi-  
cally as with recirculated air—and better.

## FRESHIRE HEATING SYSTEM

Write for details

GENERAL HEATING COMPANY

St. Paul, Minn.

Mention AMERICAN ARTISAN in your reply—Thank you!

# FILTEX

A FABRIC TYPE AIR FILTER

At a Moderate Price

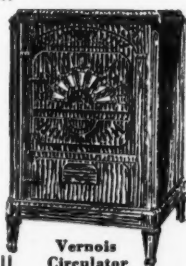
USED DRY—EASY TO CLEAN

**\$10.00** List Price  
Per Unit

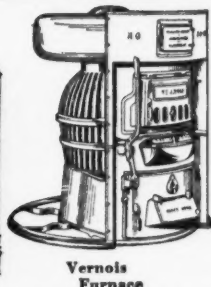
Write for Discounts

**KLEENAIRE FILTER CO.** STEVENS POINT, WISCONSIN

## 3 GREAT VERNOS PRODUCTS



Vernois  
Circulator



Vernois  
Furnace



Vernois  
Gas Range

INVESTIGATE

MT. VERNON FURNACE & MANUFACTURING CO.  
MT. VERNON, ILL.

## PREMIER FURNACES

"Constantly Improved,  
Supreme in their Field"  
Guaranteed for 10 Years

PREMIER  
De Luxe  
(Cast Iron)

Write  
for  
1931  
Catalog

PREMIER  
Duo-Weld  
(Steel)

## The Viking Shear

Compound lever handle—removable blades. Upper blade away from mechanic enabling easy following of work—an exclusive Viking feature.



Sold Under a Guarantee—Send for Particulars

**VIKING SHEAR CO., Erie, Pa.**

## STOP Trying to Seal a Furnace with Asbestos Mud Cements



"SEALS CRACKS"

A furnace joint is nothing more than a large crack,—if a mud cement will not seal a crack, it is not satisfactory for sealing a joint. METALUTE (Plastic Iron) seals cracks, therefore it will seal furnace joints and will permit the furnace to be taken apart, if necessary.

JUST SAY. Ship half-gallon METALUTE (Plastic Iron) at \$2.40. Satisfaction Guaranteed.

**COLOR-BESTOS**  
ASBESTOS  
IN PAINT FORM  
FINE PRUF. GEL PRUF. ALLO PRUF.

TECHNICAL PRODUCTS COMPANY

INSA-LUTE  
CEMENTS

SAUER  
EISEN

ADHESIVES  
COMPOUNDS

Pittsburgh (Shipping Station) Pennsylvania

## HERE IT IS—



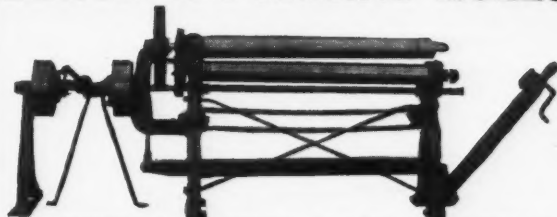
The New  
**WHITNEY  
PUNCH**  
No. 4 B

The only punch on the market offering all of these advantages.  
Drop Forged—Parts Heat Treated—Punches and Dies interchangeable with Our No. 4 Punch

Power— $\frac{1}{4}$  Inch through 16 Gauge.  
Deep Throat—2 inches.  
Balance—Natural Grip Handles  
Give Perfect Balance.  
Weight 3 pounds.  
Length—8  $\frac{1}{2}$  inches.

**W. A. WHITNEY MFG. COMPANY**  
636 RACE STREET, ROCKFORD, ILL.

## BERTSCH FORMING ROLLS

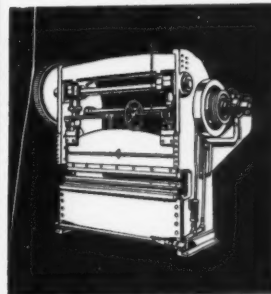


### QUICK OPENING AND CLOSING

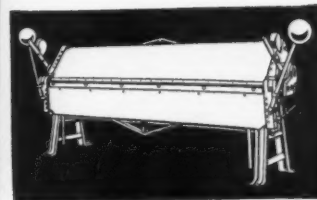
A Bertsch patent makes this the easiest to open and close.  
Write for catalog "R" today.

We make a complete line of  
SHEARS, PUNCHES, ROLLS and PRESSES  
**BERTSCH & CO., Cambridge City, Ind.**

## CHICAGO



Press Brake



Hand Bending Brake

STEEL BRAKES—PRESSES—SHEARS

**DREIS & KRUMP MFG. CO.**

7404 LOOMIS BLVD.

CHICAGO

Say you saw it in AMERICAN ARTISAN—Thank you!

# ~ MARKET QUOTATIONS ~

AMERICAN ARTISAN is the only publication quoting Prices on Metals, Sheet Metal Equipment and Supplies, Warm Air Heating Supplies and Accessories, corrected bi-weekly. These quotations are not guaranteed but are obtained from reliable sources and reflect nation-wide market conditions at the time of going to press.

NOTE—These prices are Chicago Warehouse Prices, to which must be added territory differentials

## METALS

### PIG IRON

Chicago Fdy., No. 2.....	\$17.00
Southern Fdy., No. 2.....	17.01
Lake Superior Charcoal.....	25.04
Malleable .....	17.00

### FIRST QUALITY BRIGHT CHARCOAL TIN PLATES

IC 20x28 112 sheets.....	\$23.80
IX 20x28.....	27.45
IXX 20x28 56 sheets.....	14.95
IXXX 20x28.....	16.10
IXXXX 20x28.....	17.35

### TERNE PLATES

IC 20x28, 40-lb. 112 sheets.....	Per Box \$22.50
IX 20x28, 40-lb. 112 sheets.....	25.00
IC 20x28, 25-lb. 112 sheets.....	19.80
IX 20x28, 25-lb. 112 sheets.....	22.10
IC 20x28, 20-lb. 112 sheets.....	18.25
IX 20x28, 20-lb. 112 sheets.....	20.75

### "ARMCO" INGOT IRON PLATES

No. 8 ga.—110 lbs.....	\$4.15
3/16 in.—100 lbs.....	4.05
1/4 in.—100 lbs.....	3.85

### COKE PLATES

Cokes, 89 lbs., base, 20x28.....	\$12.00
Cokes, 90 lbs., base, 20x28.....	12.20
Cokes, 100 lbs., base, 20x28.....	13.75
Cokes, 107 lbs., base, 10, 20x28.....	12.75
Cokes, 135 lbs., base, 1X, 20x28.....	14.75
Cokes, 155 lbs., base 2X, 56 sheets.....	8.50
Cokes, 175 lbs., base, 3X, 56 sheets.....	9.35
Cokes, 195 lbs., base, 4X, 56 sheets.....	10.25

### HOT ROLLED ANNEALED SHEETS

Base 10 ga.....per 100 lb.	\$3.25
"Armco" 10 ga.....per 100 lb.	4.15

### HOT ROLLED ANNEALED SHEETS 16 GA. AND HEAVIER

No. 18.....per 100 lb.	\$3.25
No. 20.....per 100 lb.	3.35
No. 22.....per 100 lb.	3.45
No. 24.....per 100 lb.	3.55
No. 26.....per 100 lb.	3.65
No. 27.....per 100 lb.	3.70
No. 28.....per 100 lb.	3.80

### GALVANIZED

No. 16.....per 100 lb.	\$3.70
No. 18.....per 100 lb.	3.80
No. 20.....per 100 lb.	3.90
No. 22.....per 100 lb.	4.00

(Standard differentials on extras to apply)

No. 24.....per 100 lb.	\$4.10
No. 26.....per 100 lb.	4.35
No. 27.....per 100 lb.	4.45
No. 28.....per 100 lb.	4.60
"Armco" 24.....per 100 lb.	5.75

### BAR SOLDER

Warranted 50-50.....per 100 lb.	\$19.25
45-55.....per 100 lb.	17.00
48-52.....per 100 lb.	17.75
Plumbum.....per 100 lb.	15.50

### ZINC

In Slabs .....	\$5.00
----------------	--------

### SHEET ZINC

Cask Lots (600 lbs.).....	\$12.00
Sheet Lots (100 lbs.).....	13.00

### BRASS

Sheets, Chicago base.....	16 1/4 c
Tubing, seamless, Chicago base.....	20 1/4 c
Wire, Chicago base.....	16 1/4 c
Rods, Chicago base.....	13 1/4 c

## COPPER

Sheets, Chicago base.....	18 1/4 c
Tubing, seamless, Chicago base.....	20 1/4 c
Wire, plain rd., 8 B. & S. Ga. and heavier .....	9 1/4 c

## LEAD

American Pig .....	\$6.00
Bar .....	7.50

## TIN

Bar Tin .....	per 100 lbs. \$33.00
Pig Tin .....	per 100 lbs. 32.00

## SHEET METAL SUPPLIES, WARM AIR FURNACE FITTINGS AND ACCESSORIES

### ASBESTOS

Paper up to 1/16.....	6c per lb.
Roll board .....	6 1/4 c per lb.
Mill board, 3/32 to 1/2.....	6 1/2 c per lb.
Corrugated paper (250 sq. ft. per roll).....	\$4.25 per roll
Pipe joint tape, per 500 lineal feet .....	\$1.50

### ASBESTOS SEGMENTS

8 in.....per 25 sets	\$1.50
9 in.....per 25 sets	1.75
10 in.....per 25 sets	2.00
12 in.....per 25 sets	2.50

### CEMENT, FURNACE

5-lb. cans, net.....	\$0.40
10-lb. cans, net.....	0.80
25-lb. cans, net.....	2.00
Per 100 lbs.....	7.50

## CLIPS

Damper	
No-Rivet Steel, with tail pieces, per gross .....	\$8.25
Rivet Steel, with tail pieces, per gross .....	7.50
Tail pieces, per gross.....	2.00

## COPPER FOOTING

Copper Footing .....	43 %
----------------------	------

## CORNICE BRAKES

Chicago Steel Bending	
No. 1 to 6B.....	Net

## CUT-OFFS

Gal. plain, round or cor. rd. 26 gauge .....	30 %
28 gauge .....	35 %

## DAMPERS

Yankee Warm Air	
7 inch, doz.....	\$1.60
8 inch, doz.....	2.20
9 inch, doz.....	2.60
10 inch, doz.....	2.80
12 inch, doz.....	3.50
14 inch, doz.....	5.00

## EAVES TROUGH

Galv. Crimpedge, crated.....	75-15 %
Zinc .....	60 %

## ELBOWS

Conductor Pipe	
Galv. plain or corrugated, round flat Crimp. 28 gauge .....	60-10 %
26 gauge .....	50 %
24 gauge .....	15 %

## Galvanized Terne Steel

Plain Rd. and Rd. Corr. 28 gauge .....	60-10 %
26 gauge .....	50 %
24 gauge .....	15 %

## Square Corrugated

28 gauge .....	55 %
26 gauge .....	40 %

## Portico Elbows

Standard Gauge Conductor Pipe, plain or corrugated. Not nested .....	70 & 5 %
Nested solid .....	70 & 5 %

## Sq. Corr., A. & B. & Octagon

28 gauge .....	55 %
26 gauge .....	40 %

## Portico

1, 1 1/4, 1 1/2 inch.....	45 %
---------------------------	------

## Copper

16 oz., all designs.....	50 %
--------------------------	------

## Zinc

All styles .....	60 %
------------------	------

## ELBOWS—Stove Pipe

1-piece Corrugated, Uniform Blue No. 28 Gauge.....	Doz. \$1.60
5 inch .....	1.75
6 inch .....	1.25
7 inch .....	1.75

## Adjustable—Uniform Blue

No. 28 Gauge, Uniform Blue. 5 inch .....	\$1.60
6 inch .....	1.75
7 inch .....	2.10

## WOOD FACES—60 % off list.

## FIRE POTS

No. 02 Gasoline Torch, 1 qt.....	Each \$5.13
No. 9250, Kerosene or Gasoline Torch, 1 qt.....	6.50
No. 10 Tinner's Furnace Square tank, 1 gal.....	11.20
No. 15 Tinner's Furnace Round tank, 1 gal.....	10.70
No. 21 Gas Soldering Furnace.....	3.60
No. 110 Automatic Gas Soldering Furnace .....	10.50

## GLASS

Single and Double Strength, A, all brackets .....	85 %
Single and Double Strength, B, all brackets .....	87 %

## HANGERS

Conductor Pipe	
Milcor Perfection Wire.....	25 %
Milcor Triplex Wire.....	10 %

## Eaves Trough

Steel (galv. after forming), from list .....	45 %
Selflock E. T. Wire, List.....	10 %

## HOOKS

Conductor	
"Direct Drive" Wrought Iron, for wood or brick.....	15 %

## MITRES

Galvanized Steel Mitres	
28 gauge .....	70-15 %
26 gauge .....	70-5 %

## PASTE

### Asbestos Dry Paste

200-lb. barrel .....	\$15.00
100-lb. barrel .....	7.75
50-lb. pail .....	4.50
25-lb. pail .....	2.50
10-lb. bag .....	1.20
5-lb. bag .....	.60

### Galvanized PIPE

Crated and nested (all gauges) .....	75-12 1/2 %
Crated and not nested (all gauges) .....	75-7 1/2 %

### Furnace Pipe

Double Wall Pipe and Fittings .....	60 %
Single Wall Pipe, Round Galvanized Pipe .....	60 %
Galvanized and Tin Fittings.....	60 %

## Lead

Per 100 lbs.....	\$12.50
Stove Pipe	
"Milcor" "Titelock" Uniform Blue	
28 gauge, 5 inch U. C. nested .....	\$10.00
28 gauge, 6 inch U. C. nested .....	11.00
28 gauge, 7 inch U. C. nested .....	13.00
30 gauge, 5 inch U. C. nested .....	9.25
30 gauge, 6 inch U. C. nested .....	10.00
30 gauge, 7 inch U. C. nested .....	12.00

### T-Joint Made Up

6-inch, 28 gauge.....per doz.	\$3.40
-------------------------------	--------

## REGISTERS AND FACES

Floor Registers	
Steel and Semi-Steel.....	40 & 10 %
All Cast Iron.....	20 %

### Baseboard

2-Piece .....	40 & 10 %
1-Piece .....	40-10 & 20 %

### Adjustable Ventilators

Adjustable Ventilators .....	40 & 10 %
------------------------------	-----------

## COLD AIR FACES

Steel and Cast, less than 14" width .....	40 & 10 %
Steel, 14" and wider.....	65 & 10 %
Cast, 14" and wider.....	60 & 10 %
Special Cold Air Faces, Steel or Cast.....	40 & 10 %

## RIDGE ROLL

Galv. Plain Ridge Roll, b'd'd .....	75-15-5 %
Galv. Plain Ridge Roll, crated .....	75-15 %

## SCREWS

Sheet Metal	
7, 1/2 x 1/4, per gross.....	\$0.52
No. 10, 3/4 x 3/16, per gross.....	0.68
No. 14, 7/8 x 1/4, per gross.....	0.83

### SHEARS, TINNERS' AND MACHINISTS'

Viking .....	\$22.00
Lennox Throatless	
No. 18 .....	35 %
Shear blades .....	10 %
(F.o.b. Marshalltown, Iowa)	

## SHOES

Galv. 28 Gauge, Plain or Corrugated, round flat crimp.....	60-10 %
26 gauge, round flat crimp.....	50 %
24 gauge, round flat crimp.....	15 %

## SNIPS

Tinners' .....	Net
----------------	-----

## VENTILATORS

Standard .....	30 to 40 %
Milcor .....	Net



## The LANSING Dailaire System Year Around Weather Control

WASHED AIR      FORCED AIR  
— All in One Casing —

### Outstanding Fuel Economy



#### Last Winter

One customer saved \$200.00 over previous year with same burner and same house with a Dailaire Unit. Many others made proportionate savings.

#### Mr. Dealer:

Now is your opportunity to connect up with the most talked of and rapidly growing industry in America, Complete Home Air Conditioning.

Write for Complete Agency Plan on Lansing Dailaire Units

**DAIL STEEL PRODUCTS CO.**

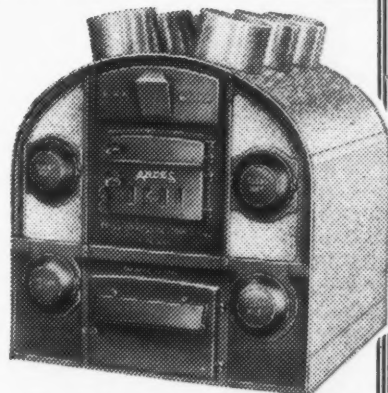
1100 Main Street

Lansing, Michigan

## ANDES FURNACES

"For Better Heating"

Warms  
Ventilates  
Humidifies  
Purifies  
and  
Refreshes  
the  
Home!



The Andes BRN Super Heater, Constructed for Lowest Type Basements.

### It will pay you well to install the ANDES "BRN" Super Heater

Offers the dealer a real unit and an opportunity to supply real air conditioning and make healthful homes. Super construction, as well as the unusual design makes ANDES FURNACES leaders and assists in bringing the dealer to the front.

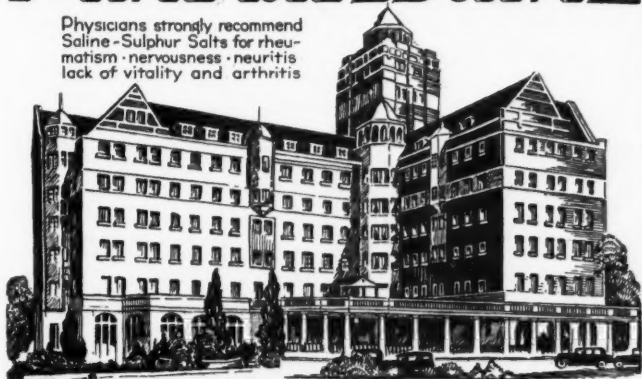
Investigate our dealer proposition and unlimited merchandising cooperation

**-ANDES-**  
**RANGE & FURNACE CORP.**  
Geneva, New York



## Mineral Baths

Physicians strongly recommend Saline-Sulphur Salts for rheumatism, nervousness, neuritis, lack of vitality and arthritis



### HOTEL WHITCOMB

World-famous Mineral Baths analyzed by leading authorities and found to contain many curative qualities equal in medicinal values to those of famous European Spas. The Whitcomb is located on a High Bluff overlooking the lake. Completely modern...Every facility for rest and recreation.



**ST. JOSEPH... MICHIGAN**

J.T. TOWNSEND Manager

MARSHALLTOWN



SHEARS

## LET MARSHALLTOWN SHEARS CUT YOUR LABOR COSTS



Put the right kind of machine on the right job.

Save time and labor costs. Make it a MARSHALLTOWN.

Let the Catalog Tell the Story—Write for It Now

The Shear Keeps Sharp Even After Months of Hard Use

There is a MARSHALLTOWN for every use. Hand—Motor—and Belt Power.

**MARSHALLTOWN MFG. CO.**

MARSHALLTOWN  
IOWA

# BUYERS' DIRECTORY

## Air Cleaners

American Air Filter Co., Inc.,  
Louisville, Ky.  
American Fdy. & Furnace Co.,  
Bloomington, Ill.  
Kleenaire Filter Co.,  
Stevens Point, Wis.  
Lakeside Co.,  
Hermansville, Mich.  
Meyer & Bro., F.,  
Peoria, Ill.

## Air Washers

American Machine Products Co.,  
Marshalltown, Iowa  
Brundage Co.,  
Kalamazoo, Mich.  
A. Gehri & Co.,  
Tacoma, Wash.  
Health Air Systems, Ann Arbor, Mich.  
Hess Warming & Vent. Co.,  
Chicago, Ill.  
Lakeside Co.,  
Hermansville, Mich.  
Menominee Air Washer Co.,  
Menominee, Mich.

## Asbestos—Liquid

Technical Products Co.,  
Pittsburgh, Pa.

## Asbestos Covering and Paper

Standard Asbestos Co. of Chicago,  
Chicago, Ill.  
Wilson, Grant, Inc.,  
Chicago, Ill.

## Ash Sifter

Diener Mfg. Co., G. W.,  
Chicago, Ill.

## Blast Gates

Berger Bros. Co.,  
Philadelphia, Pa.

## Blowers

American Fdy. & Furnace Co.,  
Bloomington, Ill.  
American Machine Products Co.,  
Marshalltown, Iowa  
Brundage Co.,  
Kalamazoo, Mich.  
Emerson Elec. Mfg. Co.,  
St. Louis, Mo.  
A. Gehri & Co.,  
Tacoma, Wash.  
Health-Air Systems, Ann Arbor, Mich.  
Hess Warming & Vent. Co.,  
Chicago, Ill.  
Henry Furnace & Fdy. Co.,  
Cleveland, Ohio  
Lakeside Co.,  
Hermansville, Mich.  
Menominee Air Washer Co.,  
Menominee, Mich.  
Warm Air Furnace Fan Co.,  
Cleveland, Ohio

## Brakes—Bending

Dreis & Krump Mfg. Co.,  
Chicago, Ill.  
Interstate Machinery Co.,  
Chicago, Ill.

## Brakes—Cornice

Dreis & Krump Mfg. Co.,  
Chicago, Ill.

## Brass and Copper

American Brass Co., Waterbury, Conn.  
Revere Copper and Brass Inc.,  
Rome, N. Y.

## Cans—Garbage

Diener Mfg. Co., G. W.,  
Chicago, Ill.

## Castings—Malleable

Fanner Mfg. Co.,  
Cleveland, Ohio

## Ceilings—Metal

Globe Iron Roofing and Corrugating  
Co.,  
Cincinnati, Ohio  
Milcor Steel Co.,  
Mil., Canton, Chgo., LaCrosse, K. C.

## Cement—Furnace

Connors Paint Mfg. Co., Wm.,  
Troy, N. Y.  
Lastik Products Corp.,  
Pittsburgh, Pa.  
Milcor Steel Co.,  
Mil., Canton, Chgo., LaCrosse, K. C.  
Technical Products Co.,  
Pittsburgh, Pa.

## Cement—Roofing

Connors Paint Mfg. Co., Wm.,  
Troy, N. Y.  
Lastik Products Corp.,  
Pittsburgh, Pa.

## Chain—Furnace

Hart & Cooley Mfg. Co.,  
Chicago, Ill.

## Chapiets

Fanner Mfg. Co.,  
Cleveland, Ohio

## Cleaners—Furnace Vacuum

Baker Furnace Co.,  
Toledo, Ohio  
Brillion Furnace Co.,  
Brillion, Wis.  
Densmore & Quinlan Co.,  
Kenosha, Wis.  
Grand Rapids Furnace Cleaner Co.,  
Grand Rapids, Mich.

## Conductor Elbows and Shoes

Acme Tin Plate & Rfg. Supply Co.,  
Philadelphia, Pa.  
Barnes Metal Products Co.,  
Chicago, Ill.  
Berger Bros. Co.,  
Philadelphia, Pa.  
Globe Iron Roofing & Corrugating Co.,  
Cincinnati, Ohio  
Milcor Steel Co.,  
Mil., Canton, Chgo., LaCrosse, K. C.

## Conductor Fittings

Acme Tin Plate & Rfg. Supply Co.,  
Philadelphia, Pa.  
Barnes Metal Products Co.,  
Chicago, Ill.  
Berger Bros. Co.,  
Philadelphia, Pa.  
Braden Mfg. Co.,  
Terre Haute, Ind.  
Globe Iron Roofing & Corrugating Co.,  
Cincinnati, Ohio  
David Lewow,  
New York, N. Y.  
Milcor Steel Co.,  
Mil., Canton, Chgo., LaCrosse, K. C.  
Rival Strap Corp.,  
New York, N. Y.

## Conductor Pipe

Acme Tin Plate & Rfg. Supply Co.,  
Philadelphia, Pa.  
Barnes Metal Products Co.,  
Chicago, Ill.  
Berger Bros. Co.,  
Philadelphia, Pa.  
Globe Iron Roofing & Corrugating Co.,  
Cincinnati, Ohio  
Milcor Steel Co.,  
Mil., Canton, Chgo., LaCrosse, K. C.

## Copper

American Brass Co., Waterbury, Conn.  
Revere Copper & Brass Inc.,  
Rome, N. Y.

## Cornices

Globe Iron Roofing & Corrugating Co.,  
Cincinnati, Ohio  
Milcor Steel Co.,  
Mil., Canton, Chgo., LaCrosse, K. C.

## Crimping Machines

Bertsch & Co.,  
Cambridge City, Ind.  
Yoder Co., The,  
Cleveland, Ohio

## Cut-offs—Rain Water

Milcor Steel Co.,  
Mil., Canton, Chgo., LaCrosse, K. C.

## Dampers—Quadrants—Accessories

Acme Tin Plate & Rfg. Supply Co.,  
Philadelphia, Pa.  
Aeolus Dickinson,  
Chicago, Ill.  
Hart & Cooley Mfg. Co.,  
Chicago, Ill.  
Howes Co., S. M.,  
Boston, Mass.  
Milcor Steel Co.,  
Mil., Canton, Chgo., LaCrosse, K. C.  
Parker-Kalon Corp.,  
New York, N. Y.  
Young Ventilating Co.,  
Cleveland, Ohio

## Dampproofings

Lastik Products Corp.,  
Pittsburgh, Pa.

## Diffusers—Air Duct

Aeolus Dickinson,  
Chicago, Ill.

## Draft Stabilizers

Silent Automatic Corp.,  
Detroit, Mich.

## Drive Screws—Hardened Metallic

Parker-Kalon Corp.,  
New York

## Eaves Trough

Acme Tin Plate & Rfg. Supply Co.,  
Philadelphia, Pa.  
Barnes Metal Products Co.,  
Chicago, Ill.  
Berger Bros. Co.,  
Philadelphia, Pa.  
Globe Iron Roofing & Corrugating Co.,  
Cincinnati, Ohio  
Milcor Steel Co.,  
Mil., Canton, Chgo., LaCrosse, K. C.

## Eaves Trough Hangers

Acme Tin Plate & Rfg. Supply Co.,  
Philadelphia, Pa.  
Berger Bros. Co.,  
Philadelphia, Pa.  
Milcor Steel Co.,  
Mil., Canton, Chgo., LaCrosse, K. C.

## Fans—Exhaust

Emerson Elec. Mfg. Co.,  
St. Louis, Mo.

## Fans—Furnace

A-C Mfg. Co.,  
Pontiac, Ill.  
American Fdy. & Furnace Co.,  
Bloomington, Ill.  
Emerson Electric Mfg. Co.,  
St. Louis, Mo.  
A. Gehri & Co.,  
Tacoma, Wash.  
Warm Air Furnace Fan Co.,  
Cleveland, Ohio

## Fans—Ventilating

Emerson Elec. Mfg. Co.,  
St. Louis, Mo.

## Filters—Furnace

American Air Filter Co., Inc.,  
Louisville, Ky.  
A. Gehri & Co.,  
Tacoma, Wash.  
Independent Air Filter Co.,  
Chicago, Ill.  
Kleenaire Filter Co.,  
Stevens Point, Wis.  
Lakeside Co.,  
Hermansville, Mich.

## Fluxes—Soldering

Kester Solder Co.,  
Chicago, Ill.  
Ryerson & Son, Inc.,  
Chicago, N. Y., St. L., Det., Cleve.

## Forming Rolls

Bertsch & Co.,  
Cambridge City, Ind.  
Interstate Machinery Co.,  
Chicago, Ill.

## Furnaces for Gas or Oil

Dall Steel Products Co.,  
Lansing, Mich.  
Health-Air Systems, Ann Arbor, Mich.

## Furnaces—Gas

American Fdy. & Furnace Co.,  
Bloomington, Ill.  
American Furnace Co.,  
St. Louis, Mo.  
Henry Furnace & Foundry Co.,  
Cleveland, Ohio  
Lennox Furnace Co.,  
Marshalltown, Iowa  
Meyer Furnace Co.,  
Peoria, Ill.  
Payne Furnace and Supply Co.,  
Beverly Hills, Calif.  
Round Oak Furnace Co.,  
Dowagiac, Mich.  
Western Steel Products Co.,  
Duluth, Minn.  
Wise Furnace Co.,  
Akron, Ohio

## Furnaces—Gas Auxiliary

Forest City Foundries Co.,  
Cleveland, Ohio

## Furnaces—Oil Burning

Motor Wheel Corp., Heater Div.,  
Lansing, Mich.

## Furnaces—Warm Air (See Also Unit Air Conditioners)

Acme Tin Plate & Rfg. Supply Co.,  
Philadelphia, Pa.  
Agricola Furnace Co.,  
Gadsden, Ala.  
American Fdy. & Furnace Co.,  
Bloomington, Ill.  
American Furnace Co.,  
St. Louis, Mo.  
Andes Range & Furnace Corp.,  
Geneva, N. Y.  
Armstrong Furnace Co.,  
Columbus, O.  
Brillion Furnace Co.,  
Brillion, Wis.  
Dall Steel Products Co.,  
Lansing, Mich.  
Deshler Foundry & Machine Works,  
Deshler, Ohio  
Enterprise Boiler & Tank Works,  
Chicago, Ill.  
Forest City Foundries Co.,  
Cleveland, Ohio  
General Heating Co.,  
St. Paul, Minn.  
Graff Furnace Co.,  
Scranton, Pa.  
Hall-Neal Furnace Co.,  
Indianapolis, Ind.  
Health-Air Systems,  
Ann Arbor, Mich.  
Henry Furnace & Fdy. Co.,  
Cleveland, Ohio  
Hess Warming & Vent. Co.,  
Chicago, Ill.  
Lennox Furnace Co.,  
Marshalltown, Iowa  
Liberty Foundry Co.,  
St. Louis, Mo.  
May Fieberger Furnace Co.,  
Newark, Ohio  
Meyer Furnace Co.,  
Peoria, Ill.  
Midland Furnace Co.,  
Cleveland, Ohio  
Motor Wheel Corp., Heater Div.,  
Lansing, Mich.  
Mt. Vernon Furnace & Mfg. Co.,  
Mt. Vernon, Ill.  
Payne Furnace & Supply Co.,  
Beverly Hills, Calif.  
Peerless Foundry Co.,  
Indianapolis, Ind.  
Premier Warm Air Heater Co.,  
Dowagiac, Mich.  
Round Oak Furnace Co.,  
Dowagiac, Mich.  
Schwab Furnace & Mfg. Co.,  
Cedar Grove, Wis.

## Furnaces—Warm Air

(See Also Unit Air Conditioners)  
U. S. Furnace Co.,  
Youngstown, Ohio  
Waterman-Waterbury Co.,  
Minneapolis, Minn.  
Western Steel Products Co.,  
Duluth, Minn.  
Wise Furnace Co.,  
Akron, Ohio

## Grilles

Auer Register Co.,  
Cleveland, Ohio  
Chicago Perforating Co.,  
Chicago, Ill.  
Harrington & King Perforating Co.,  
Chicago, Ill.  
Hart & Cooley Mfg. Co.,  
Chicago, Ill.  
Independent Register & Mfg. Co.,  
Cleveland, Ohio  
Tuttle & Bailey Mfg. Co.,  
New York  
U. S. Register Co.,  
Battle Creek, Mich.

## Guards—Machine and Belt

Chicago Perforating Co.,  
Chicago, Ill.  
Harrington & King Perforating Co.,  
Chicago, Ill.

## Handles—Boiler

Berger Bros. Co.,  
Philadelphia, Pa.

## Handles—Furnace Door

Fanner Mfg. Co.,  
Cleveland, Ohio

## Handles—Soldering Iron

Parker-Kalon Corp.,  
New York, N. Y.

## Heaters—Cabinet

Agricola Furnace Co.,  
Gadsden, Ala.  
Motor Wheel Corp., Heater Division,  
Lansing, Mich.  
Mt. Vernon Furnace & Mfg. Co.,  
Mt. Vernon, Ill.  
Payne Furnace & Supply Co.,  
Beverly Hills, Calif.  
Premier Warm Air Heater Co.,  
Dowagiac, Mich.  
Waterman-Waterbury Co.,  
Minneapolis, Minn.

## Heaters—School Room

Meyer Furnace Co.,  
Peoria, Ill.  
Waterman-Waterbury Co.,  
Minneapolis, Minn.  
Western Steel Products Co.,  
Duluth, Minn.

## Humidifiers

Automatic Humidifier Co.,  
Cedar Falls, Iowa  
Clarm Mechanical Devices Co.,  
Lima, Ohio  
Columbus Humidifier Co.,  
Columbus, Ohio  
Diener Mfg. Co., G. W.,  
Chicago, Ill.  
Hess Warming & Vent. Co.,  
Chicago, Ill.  
Menominee Air Washer Co.,  
Menominee, Mich.  
Meyer & Bro. Co., F.,  
Peoria, Ill.  
Sallada Mfg. Co.,  
Minneapolis, Minn.

## Humidifier Valves

Apex Regulator Co.,  
Marshalltown, Iowa

## Machinery—Culvert

Bertsch & Co.,  
Cambridge City, Ind.  
Interstate Machinery Co.,  
Chicago, Ill.

## Machinery—Rebuilt

Interstate Machinery Co.,  
Chicago, Ill.

## Machines and Tools—Tinsmith's

Bertsch & Co.,  
Cambridge City, Ind.  
Dreis & Krump Mfg. Co.,  
Chicago, Ill.  
Interstate Machinery Co.,  
Chicago, Ill.  
Marshalltown Mfg. Co.,  
Marshalltown, Iowa  
Niagara Mach. & Tool Wks.,  
Buffalo, N. Y.  
Parker-Kalon Corp.,  
New York, N. Y.  
Viking Shear Co.,  
Erie, Pa.  
Whitney Mfg. Co., W. A.,  
Rockford, Ill.

## Metal Lath—Expanded

Milcor Steel Co.,  
Mil., Canton, Chgo., LaCrosse, K. C.

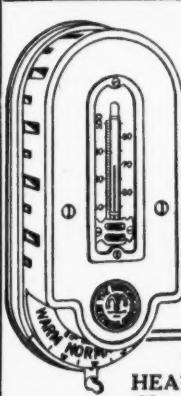
## Miters

Barnes Metal Products Co.,  
Chicago, Ill.  
Berger Bros. Co.,  
Philadelphia, Pa.  
Braden Mfg. Co.,  
Terre Haute, Ind.  
Milcor Steel Co.,  
Mil., Canton, Chgo., LaCrosse, K. C.

## Motors—Electric

Emerson Elec. Mfg. Co.,  
St. Louis, Mo.

(Continued on page 46)



# "FLASH"

**Thermostatic—All-Electric  
Controlled**

## HEAT REGULATOR

Write for sample

**THE MODERN  
HEAT REGULATOR CO.**  
Cleveland Ohio  
Territory Open

Dealer's  
Price  
**\$16.50**  
Complete

# WATERBURY SEAMLESS FURNACE

REG. U.S. PAT. OFF. PIPE OR PIPELESS

**Permanently  
Gas-Tight**

One-Piece Steel  
Construction—  
Durable and  
Economical

**Waterman-Waterbury Co.**  
1122 Jackson St. N.E.  
Minneapolis Minnesota


LEARN MORE ABOUT THIS HUMIDIFIER



**COLUMBUS**  
*Automatic Air Conditioner for the Home*  
**HUMIDIFIER**

Read Back Cover, Artisan, October 26th issue  
**COLUMBUS HUMIDIFIER COMPANY**  
Station A, Columbus, Ohio

REGISTERS OF THE HOUR



**AUER MAKES A  
GRILLE AND REGISTER  
TO MEET EVERY NEED**

**AUER REGISTER COMPANY**  
3608 Payne Avenue CLEVELAND, OHIO

## Built to Inspire the Public's Confidence

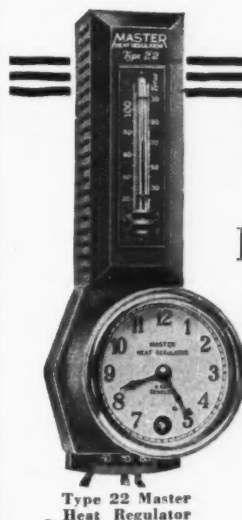
The supremacy of Faultless Furnaces is at once apparent, even to the layman. Their fine appearance bespeaks fine performance! Dealers find a desire for Faultless Furnaces already created . . . the sale, then, is easy!



"True to the Name"  
**FAULTLESS**  
WARM AIR FURNACES

**The Graff Furnace Company**  
Scranton, Penna.

New York City Sales Office: 116-118 Wooster Street



## Big Profits PLUS Reliable Service

THERE'S a big profit for you in the sale and installation of every MASTER Heat Regulator! Many of your customers, past, present and future need and want the greater comfort and economy of dependable MASTER heat control.

Full Electric. Nothing to forget. Its simple, strong construction gives years of accurate, trouble-free service. Type 22 with Full Electric Motor, List Price, \$55. Same, with 8-Day Jewelled Clock Control, \$80. Type 44, Gradual Operation, prices on request.

Your big discounts from our list prices insure handsome profits. Write today for full details and proposition.

**WHITE MFG. CO.**

2362 University Ave.  
St. Paul, Minn.

**MASTER  
HEAT REGULATOR**

Mention AMERICAN ARTISAN in your reply—Thank you!



# BUYERS' DIRECTORY

(Continued from page 44)

**Nails—Hardened Masonry**  
Parker-Kalon Corp., New York, N. Y.

**Oil Burners**  
Northern Oil Burners Inc., Minneapolis, Minn.  
Silent Automatic Corp., Detroit, Mich.

**Paint**  
Connors Paint Mfg. Co., Wm., Troy, N. Y.

**Perforated Metals**  
Chicago Perforating Co., Chicago  
Harrington & King Perforating Co., Chicago, Ill.

**Pipe and Fittings—Furnace**  
Henry Furnace & Fdy. Co., Cleveland, Ohio  
Meyer & Bro., F., Peoria, Ill.  
Milcor Steel Co., Mil., Canton, Chgo., LaCrosse, K. C.  
Peerless Foundry Co., Indianapolis, Ind.

**Pokers—Furnace**  
Fanner Mfg. Co., Cleveland, Ohio  
Independent Reg. & Mfg. Co., Cleveland, Ohio

**Pulleys—Furnace**  
Hart & Cooley Mfg. Co., Chicago, Ill.

**Punches**  
Bertach & Co., Cambridge City, Ind.  
Interstate Machinery Co., Chicago, Ill.  
Niagara Mach. & Tool Wks., Buffalo, N. Y.  
Parker-Kalon Corp., New York, N. Y.  
Ryerson & Son, Inc., Jos. T., Chgo., N. Y., St. L., Det., Cleve.  
W. A. Whitney Mfg. Co., Rockford, Ill.

**Punches—Combination Bench and Hand**  
Niagara Mach. & Tool Wks., Buffalo, N. Y.  
Parker-Kalon Corp., New York, N. Y.

**Punches—Hand**  
Niagara Mach. & Tool Wks., Buffalo, N. Y.  
Parker-Kalon Corp., New York, N. Y.  
W. A. Whitney Mfg. Co., Rockford, Ill.

**Putty-Stove**  
Connors Paint Mfg. Co., Wm., Troy, N. Y.

**Radiator Cabinets**  
Hart & Cooley Mfg. Co., Chicago, Ill.  
Tuttle & Bailey Mfg. Co., New York

**Registers—Warm Air**  
Auer Register Co., Cleveland, Ohio  
Forest City Foundries Co., Cleveland, Ohio  
Hart & Cooley Mfg. Co., Chicago, Ill.  
Henry Furnace & Fdy. Co., Cleveland, Ohio  
Independent Register & Mfg. Co., Cleveland, Ohio  
Meyer & Bro., F., Peoria, Ill.  
Milcor Steel Co., Mil., Canton, Chgo., LaCrosse, K. C.  
Symonds Register Co., St. Louis, Mo.  
Tuttle & Bailey Mfg. Co., New York  
United States Register Co., Battle Creek, Mich.

**Registers—Wood**  
Auer Register Co., Cleveland, Ohio  
Milcor Steel Co., Mil., Canton, Chgo., LaCrosse, K. C.

**Regulators—Automatic Furnace**  
Hart & Cooley Mfg. Co., Chicago, Ill.  
Lakeside Co., Hermansville, Mich.  
Minneapolis-Honeywell Regulator Co., Minneapolis, Minn.  
Modern Heat Regulator Co., Cleveland, Ohio  
Pioneer Heat Regulator Co., Dayton, Ohio  
White Mfg. Co., Minneapolis, Minn.

**Regulators—Automatic Heat**  
Hart & Cooley Mfg. Co., Chicago, Ill.  
Minneapolis-Honeywell Regulator Co., Minneapolis, Minn.  
Modern Heat Regulator Co., Cleveland, Ohio  
Pioneer Heat Regulator Co., Dayton, Ohio  
Tuttle & Bailey Mfg. Co., New York  
White Mfg. Co., Minneapolis, Minn.

**Repairs—Stove and Furnace**  
Brauer Supply Co., A. G., St. Louis, Mo.  
Des Moines Stove Repair Co., Des Moines, Iowa  
Northwestern Stove Repair Co., Chicago, Ill.  
Peerless Fdry. Co., Indianapolis, Ind.

**Solder—Rosin Core**  
Kester Solder Co., Chicago, Ill.

**Ridging**  
Globe Iron Roofing & Corrugating Co., Cincinnati, Ohio  
Milcor Steel Co., Mil., Canton, Chgo., LaCrosse, K. C.

**Rings—Furnace Casing**  
Forest City Foundries Co., Cleveland, Ohio

**Roof Flashing**  
Globe Iron Roofing & Corrugating Co., Cincinnati, Ohio  
Milcor Steel Co., Mil., Canton, Chgo., LaCrosse, K. C.

**Roof Paints**  
Connors Paint Mfg. Co., Wm., Lastik Products Corp., Pittsburgh, Pa.

**Roofing—Iron and Steel**  
Globe Iron Roofing & Corrugating Co., Cincinnati, Ohio  
Inland Steel Co., Chicago, Ill.  
Milcor Steel Co., Mil., Canton, Chgo., LaCrosse, K. C.  
Newport Rolling Mill Co., The, Newport, Ky.  
Republic Steel Corp., Youngstown, Ohio

**Roofing—Tin and Terne**  
Milcor Steel Co., Mil., Canton, Chgo., LaCrosse, K. C.  
Republic Steel Corp., Youngstown, Ohio

**Rubbish Burners**  
Hart & Cooley Mfg. Co., Chicago, Ill.

**School—Sheet Metal Pattern Drafting**  
St. Louis Technical Institute, St. Louis, Mo.

**Schools—Warm Air Heating**  
St. Louis Technical Institute, St. Louis, Mo.

**Screws—Hardened Metallic Drive**  
Milcor Steel Co., Mil., Canton, Chgo., LaCrosse, K. C.  
Parker-Kalon Corp., 200 Varick St., New York

**Screws—Hardened Self-Tapping, Sheet Metal**  
Milcor Steel Co., Mil., Canton, Chgo., LaCrosse, K. C.  
Parker-Kalon Corp., New York

**Screens—Perforated Metal**  
Chicago Perforating Co., Chicago, Ill.  
Harrington & King Perforating Co., Chicago, Ill.

**Scuppers**  
Aeolus Dickinson, Chicago, Ill.

**Shears—Hand and Power**  
Interstate Machinery Co., Chicago, Ill.  
Marshalltown Mfg. Co., Marshalltown, Iowa  
Niagara Mach. & Tool Wks., Buffalo, N. Y.  
Viking Shear Co., Erie, Pa.  
Yoder Co., The, Cleveland, Ohio

**Sheet Metal Screws—Hardened, Self-Tapping**  
Parker-Kalon Corp., New York

**Sheets—Alloy**  
Inland Steel Co., Chicago, Ill.  
International Nickel Co., New York, N. Y.  
Milcor Steel Co., Mil., Canton, Chgo., LaCrosse, K. C.  
Newport Rolling Mill Co., Newport, Ky.  
Republic Steel Corp., Youngstown, Ohio

**Sheets—Black and Galvanized**  
Granite City Steel Co., Granite City, Ill.  
Inland Steel Co., Chicago, Ill.  
Milcor Steel Co., Mil., Canton, Chgo., LaCrosse, K. C.  
Newport Rolling Mill Co., Newport, Ky.  
Republic Steel Corp., Youngstown, Ohio

**Sheets—Copper**  
American Brass Co., Waterbury, Conn.  
Revere Copper & Brass Inc., Rome, N. Y.

**Sheets—Iron**  
Granite City Steel Co., Granite City, Ill.  
Milcor Steel Co., Mil., Canton, Chgo., LaCrosse, K. C.  
Newport Rolling Mill Co., Newport, Ky.  
Republic Steel Corp., Youngstown, Ohio

**Sheets—Copper Bearing Steel**  
Granite City Steel Co., Granite City, Ill.  
Inland Steel Co., Chicago, Ill.  
Milcor Steel Co., Mil., Canton, Chgo., LaCrosse, K. C.  
Newport Rolling Mill Co., Newport, Ky.  
Republic Steel Corp., Youngstown, Ohio

**Sheets—Nickel**  
International Nickel Co., New York

**Sheets—Pure Iron Copper Alloy**  
Newport Rolling Mill Co., Newport, Ky.

**Sheets—Special Finish**  
Inland Steel Co., Chicago, Ill.  
Newport Rolling Mill Co., Newport, Ky.  
Republic Steel Corp., Youngstown, Ohio

**Shingles and Tile—Metal**  
Globe Iron Roofing & Corrugated Co., Cincinnati, Ohio  
Milcor Steel Co., Mil., Canton, Chgo., LaCrosse, K. C.

**Skylights**  
Globe Iron Roofing & Corrugating Co., Cincinnati, Ohio  
Milcor Steel Co., Mil., Canton, Chgo., LaCrosse, K. C.

**Snips**  
Peck, Stow & Wilcox Co., Southington, Conn.  
Ryerson & Son, Inc., Jos. T., Chgo., N. Y., St. L., Det., Cleve.

**Snow Guards**  
Berger Bros. Co., Philadelphia, Pa.  
David Levow, New York, N. Y.  
Rival Strap Corp., New York, N. Y.

**Solder**  
Kester Solder Co., Chicago, Ill.  
Milcor Steel Co., Mil., Canton, Chgo., LaCrosse, K. C.  
Ryerson & Son, Inc., Jos. T., Chgo., N. Y., St. L., Det., Cleve.

**Solder—Acid Core**  
Kester Solder Co., Chicago, Ill.  
Ryerson & Son, Inc., Jos. T., Chgo., N. Y., St. L., Det., Cleve.

**Solder—Self-Fluxing**  
Kester Solder Co., Chicago, Ill.  
Ryerson & Son, Inc., Jos. T., Chgo., N. Y., St. L., Det., Cleve.

**Soldering Furnaces**  
Diener Mfg. Co., G. W., Chicago, Ill.  
Ryerson & Son, Inc., Jos. T., Chgo., N. Y., St. L., Det., Cleve.

**Soot Destroyer**  
Saginaw Salt Prod. Co., Saginaw, Mich.

**Specialties—Hardware**  
Diener Mfg. Co., G. W., Chicago, Ill.

**Stars—Hard Iron Cleaning**  
Fanner Mfg. Co., Cleveland, Ohio

**Stove Pipe and Fittings**  
Meyer & Bro. Co., F., Peoria, Ill.  
Milcor Steel Co., Mil., Canton, Chgo., LaCrosse, K. C.

**Stove and Furnace Trimmings**  
Fanner Mfg. Co., Cleveland, Ohio

**Strainers—Roof**  
David Levow, New York, N. Y.  
Rival Strap Corp., New York, N. Y.

**Straps—Ornamental Pipe**  
David Levow, New York, N. Y.  
Rival Strap Corp., New York, N. Y.

**Tinplate**  
Granite City Steel Co., Granite City, Ill.  
Milcor Steel Co., Mil., Canton, Chgo., LaCrosse, K. C.  
Republic Steel Corp., Youngstown, Ohio

**Tools—Tinsmith's**  
(See Machines—Tinsmith's)

**Torches**  
Diener Mfg. Co., G. W., Chicago, Ill.  
Ryerson & Son, Inc., Jos. T., Chgo., N. Y., St. L., Det., Cleve.

**Unit Air Conditioners**  
American Fdry. & Furnace Co., Bloomington, Ill.  
American Furnace Co., St. Louis, Mo.  
Andes Range & Furnace Corp., Geneva, N. Y.  
Armstrong Furnace Co., Columbus, Ohio  
Dall Steel Products Co., Lansing, Mich.  
Henry Furnace & Fdry. Co., Cleveland, Ohio  
Health-Air Systems, Ann Arbor, Mich.  
Hess Warming & Ventilating Co., Chicago, Ill.  
Lennox Furnace Co., Marshalltown, Iowa  
May-Fieberger Co., Newark, Ohio  
Meyer Furnace Co., Peoria, Ill.  
Midland Furnace Co., Columbus, Ohio  
Motor Wheel Corp., Lansing, Mich.  
Payne Furnace & Supply Co., Beverly Hills, Calif.  
Waterman-Waterbury Co., Minneapolis, Minn.

**Vacuum Cleaners—Furnace**  
(See Furnace Cleaners)  
Baker Furnace Co., Toledo, Ohio  
Brillion Furnace Co., Brillion, Wis.  
Densmore & Quinlan Co., Kenosha, Wis.

**Ventilators—Ceiling**  
Hart & Cooley Mfg. Co., Chicago, Ill.  
Henry Furnace & Fdy. Co., Cleveland, Ohio  
Independent Reg. & Mfg. Co., Cleveland, Ohio

**Ventilators—Floor**  
Aeolus Dickinson, Chicago, Ill.

**Ventilators—Roof**  
Aeolus Dickinson, Chicago, Ill.  
Berger Bros. Co., Philadelphia, Pa.  
Burt Mfg. Co., Akron, Ohio  
Jordan & Co., Paul R., Indianapolis, Ind.  
Milcor Steel Co., Mil., Canton, Chgo., LaCrosse, K. C.

**Water Pressure Regulators**  
Apex Regulator Co., Marshalltown, Iowa

**Wood Faces—Warm Air**  
Auer Register Co., Cleveland, Ohio  
Milcor Steel Co., Mil., Canton, Chgo., LaCrosse, K. C.

Mention AMERICAN ARTISAN in your reply—Thank you!



APEX Class BB Self-Contained, All-Bronze, Reducing Valve or Pressure Regulator, with Large-Capacity Strainer and Drip Pocket.

## FOR HUMIDIFIERS

APEX Water Pressure Regulators or Reducing Valves with Built-in Strainers and Drip Pockets

### Will Insure

MINIMUM WATER CONSUMPTION  
NOISELESS OPERATION  
STEADY WATER FLOW  
PROPER HUMIDITY CONTROL  
MINIMUM WEAR ON NOZZLE OR ORIFICE

### Apex Regulator Company

Division of Fisher Governor Company  
Marshalltown, Ia.

THE WORLD'S LARGEST  
MANUFACTURERS OF  
STEEL FURNACES

**LENNOX**  
FURNACE CO., INC.

MARSHALLTOWN - IOWA  
SYRACUSE - NEW YORK

## "American Seal"

FURNACE CEMENT

Roof Cement—Stove Putty  
Plumbers Putty

PAINTS AND SPECIALTIES

WILLIAM CONNORS PAINT MFG. CO.

Established 1853

TROY

NEW YORK

JAMES L. PERKINS, Western Distributor  
140 South Dearborn Street, Chicago, Illinois

**FURNACE  
STOVE &  
BOILER - REPAIRS**

PROMPT and COMPLETE  
SHIPMENTS

DES MOINES STOVE REPAIR CO.  
Des Moines, Iowa

ADAPT AND GRATE FOR EVERY MAKE  
SINCE 1862

## Matched Units

EXPERTS in every line of endeavor and profession are now demanding Matched units and tools.

We offer the Warm Air Heating Industry matched units—A Twin Blower and Twin Washer—which operate jointly under the most stringent requirements.

The Washer is mounted above the Blower. In this way no additional space is required.

Progressive dealers everywhere are finding Brundage "Air Conditioning" units profitable to install.

It will pay you to investigate

Manufacturers, too, will find it possible to engineer Brundage Units into their plans for Air Conditioning.

## BLOWERS



## WASHERS

SILENT

The Brundage Company  
Kalamazoo, Mich.

## NIAGARA De Luxe



Full Air-Conditioning  
when desired

No need to look farther for the finest full air conditioning installation obtainable. The new Niagara DeLuxe Furnace provides it. And with its handsome new red crackle finish, looks the part. Write for folder No. 101.

The Forest City Foundries Company  
2500 West 27th Street, Cleveland, Ohio

**NIAGARA**  
WARM AIR  
FURNACES

Mention AMERICAN ARTISAN in your reply—Thank you!

# Alphabetical List of Advertisers

*Firms represented in this issue are identified by the folio of the page on which their advertising appears. Advertising which appears in alternate issues is marked with an asterisk.*

A-C Mfg. Co.....	40	Lakeside Co. ....	39
Aeolus Dickinson*	...	Lastik Products Co., Inc.*.....	47
Agricola Furnace Co.....	5	Lennox Furnace Co.....	39
American Air Filter Co., Inc.....	12	Levow, David .....	39
American Brass Co.....	38	Liberty Foundry Co.*.....	...
American Foundry & Furnace Co.*.....	...	Marshalltown Mfg. Co.....	43
American Furnace Co.*.....	...	May-Fieberger Co. ....	35
American Machine Products Co.....	50	McIlvaine Burner Corp.*.....	39
Andes Range & Furnace Corp.....	43	Menominee Air Washer Co.....	35
Apex Regulator Co.....	47	Meyer & Bro., F.....	37
Armstrong Furnace Co.*.....	45	Meyer Furnace Co.*.....	37
Auer Register Co.....	45	Midland Furnace Co.....	Back Cover
Automatic Humidifier Co.*.....	...	Milcor Steel Co.....	45
Baker Furnace Co.*.....	...	Minneapolis-Honeywell Reg. Co.*.....	45
Barnes Metal Prod. Co.....	51	Modern Heat Regulator Co.....	41
Berger Bros. Co.....	40	Motor Wheel Corp., Heater Div.*.....	41
Bertsch & Co.....	41	Mt. Vernon Furnace & Mfg. Co.....	6
Braden Mfg. Co.*.....	...	Newport Rolling Mill Co.....	...
Brauer, A. G., Supply Co.*.....	...	Niagara Machine & Tool Works*.....	...
Brillion Furnace Co.*.....	...	Northern Oil Burners, Inc.*.....	3
Brundage Co. ....	47	Northwestern Stove Repair Co.....	...
Burt Mfg. Co.*.....	...	Osborn Co., The J. M. & L. A.*.....	...
Chicago Perforating Co.....	40	Overton, Platte* .....	8
Clarm Mechanical Devices Co.*.....	45	Parker-Kalon Corp. ....	50
Columbus Humidifier Co.....	47	Payne Furnace & Supply Co.....	36
Connors Paint Co., Wm.....	47	Peck, Stow & Wilcox Co.*.....	2
Dail Steel Products Co.....	43	Peerless Foundry Co.....	41
Densmore & Quinlan Co.*.....	39	Pioneer Heat Regulator Co.....	...
Deshler Foundry & Machine Works.....	39	Premier Warm Air Heater Co.....	...
Des Moines Stove Repair Co.....	47	Republic Steel Corp.*.....	9
Diener Mfg. Co., Geo. W.....	40	Revere Copper & Brass, Inc.....	39
Dreis & Krump Mfg. Co.....	41	Rival Strap Corp.....	40
Economy Baler Co.....	33	Round Oak Furnace Co.....	...
Emerson Electric Mfg. Co.*.....	...	Rybolt Heater Co.*.....	...
Enterprise Boiler & Tank Works*.....	...	Ryerson & Son, Inc., Jos. T.*.....	...
Fanner Mfg. Co.*.....	...	Saginaw Salt Products Co.*.....	...
Forest City Foundries Co.....	47	Sallada Mfg. Co.*.....	...
Gehri, A., & Co.....	38	St. Louis Tech. Inst.*.....	38
General Heating Co.....	40	Schwab Furnace & Mfg. Co.....	...
Globe Iron Roofing & Corrugating Co.....	7	Silent Automatic Corp.*.....	...
Graff Furnace Co.....	45	Standard Asbestos Mfg. Co.*.....	...
Granite City Steel Co.....	11	Standard Fdy. & Furn. Co.*.....	...
Grand Rapids Furnace Cleaner Co.*.....	...	Symonds Register Co.*.....	41
Half-Neal Furnace Co.*.....	...	Technical Products Co.....	...
Harrington & King Perf. Co.....	36	Time-O-Stat Controls, Div. Minneapolis-	...
Hart & Cooley Mfg. Co.....	37	Honeywell Regulator Co.*.....	...
Health-Air Systems .....	33	United States Furnace Co.*.....	...
Henry Furn. & Fdy. Co.....	40	United States Register Co.*.....	41
Hess Warming & Ventilating Co.....	33	Viking Shear Co.....	45
Howes Co., S. M.*.....	...	Waterman-Waterbury Co. ....	10
Independent Air Filter Co.*.....	...	Western Steel Products Co.....	43
Independent Reg. & Mfg. Co.*.....	...	Whitcomb Hotel .....	45
Inland Steel Co.*.....	...	White Mfg. Co.....	41
International Nickel Co.*.....	...	Whitney Mfg. Co., W. A.....	...
Interstate Machinery Co.*.....	...	Wilson, Grant, Inc.*.....	...
Jordan & Co., Paul R.*.....	...	Wise Furnace Co.*.....	38
Kester Solder Co.*.....	41	Yoder Co., The.....	...
Kleenaire Filter Co.....	...	Young Ventilating Co., The*.....	...

THE BUYERS' DIRECTORY APPEARS ON PAGES 44 AND 46



# Classified Advertising

## BUSINESS CHANCES

**Lightning Rods**—Dealers who are selling Lightning Protection will make money by writing to us for our latest Factory to Dealer Prices. We employ no salesmen and save you all overhead charges. Our Pure Copper Cable and Fixtures are endorsed by the National Board of Fire Underwriters and hundreds of dealers. Write today for samples and prices. L. K. Diddle Company, Marshfield, Wis.

An unusual opportunity for an executive in sales or administrative capacity. For a man of proven ability, an investment of \$30,000 will buy a substantial interest in established, reputable heater manufacturing company with assets over \$350,000. Write fully to R-542, AMERICAN ARTISAN, 139 North Clark Street, Chicago, Illinois.

For Sale—Sheet metal shop doing nice business with A-1 reputation, in town of 12,000. Very little competition. Several hundred furnaces installed in community. Everything you need in equipment to work with; good stock on hand; can step right in and go to work. Priced to sell with a wonderful opportunity. Well founded reasons for disposing of this business. You must see this layout to appreciate the offer. Address E-542, AMERICAN ARTISAN, 139 North Clark Street, Chicago, Illinois.

### Manufacturers' Agents

Wanted to sell our furnace cement, roofing paint and cement and calking compounds. Our consistent trade paper advertising is creating demand. Exclusive territory given with liberal commission. Address W-538, AMERICAN ARTISAN, 139 N. Clark Street, Chicago, Illinois.

Wanted to Buy—Sheet Metal shop in rural town. Must be doing enough business for two men. Give full particulars, year established, and price in first letter. Address O-542, AMERICAN ARTISAN, 139 North Clark Street, Chicago, Illinois.

Wanted—Place to open shop or to manage one. Now operating as first class steam fitter and plumber, with full set of tools and a few hundred dollars to invest. Can estimate and lay out all work. Best of references as to honesty, ability, sobriety, etc. Prefer some town in Illinois. Address S-542, AMERICAN ARTISAN, 139 North Clark Street, Chicago, Illinois.

### SPECIALTIES WANTED

Manufacturer with salesmen calling on the wholesale trade can handle several good sheet metal and furnace specialties to advantage. Address

L-542, AMERICAN ARTISAN  
139 N. Clark Street Chicago, Illinois

For Sale—Well established Warm Air Heating and Sheet Metal Shop doing nice business with A-1 reputation in town of 6,000. Several hundred furnaces installed in community. Everything you need in equipment to work with; can step right in. Priced to sell. A wonderful opportunity. Good reasons for disposing of this business. Address W-542, AMERICAN ARTISAN, 139 North Clark Street, Chicago, Illinois.

For Sale—Sheet metal body and fender radiator shop in Colorado town of 8,000. Reason for selling, illness. Address Z-542, AMERICAN ARTISAN, 139 North Clark Street, Chicago, Illinois.

## HELP WANTED

### Manufacturers Agents

We have a complete line of air filters, and want representation. Write for details to P-542, AMERICAN ARTISAN, 139 North Clark Street, Chicago, Illinois.

## SITUATION WANTED

**Situation Wanted**—By a first class sheet metal mechanic, one who is steady and understands the business thoroughly, having spent 25 years at this trade. Can handle anything that comes up in a sheet metal shop from estimating to the finish. Can go anywhere. Address Edward Collins, 154 Oakland Avenue, Macon, Georgia. G-542

**Situation Wanted**—Permanent connection with a reliable company, one that is promoting reconditioning air systems for all types of buildings, wanted. Have complete knowledge of layout, estimating and sales promotion. Best of references. Address H-542, AMERICAN ARTISAN, 139 North Clark Street, Chicago, Illinois.

**Situation Wanted**—Experienced tinner and furnace installer wishes steady year around position in southern Minnesota, northern Iowa or near Omaha, Nebraska, or Des Moines, Iowa. Address T-541, AMERICAN ARTISAN, 139 North Clark Street, Chicago, Ill.

**Situation Wanted**—By a first class auto radiator repair man. Can rebuild and recore any make. Prefer Illinois or Indiana. Address A. B. Creacy, 115 Merchant Street, Havana, Illinois. M-542

**Wanted**—By graduate Mechanical Engineer, with twenty years experience in sheet metal construction and roofing in all their branches, a position with some reliable concern as estimator, pattern cutter, detailer, shop manager, foreman, or all these combined. Good references from past employers, as to character and ability. Married and strictly sober. Address T-542, AMERICAN ARTISAN, 139 North Clark Street, Chicago, Illinois.

**Situation Wanted**—By reliable sheet metal worker. Long general experience in warm air heating, sheet metal work and plumbing. Will go anywhere. Can figure jobs and handle men. Neat and accurate with work. A-1 habits. Address A-543, AMERICAN ARTISAN, 139 North Clark Street, Chicago, Illinois.

## TOOLS AND MACHINERY

For Sale—Complete set of tinner's tools, plumbing tools, and dies up to two inches. Address L. E. Swift, 504 East Front Street, Missoula, Montana. Y-541

For Sale—Complete set of tinner's tools. Address J. B. Crowley, Oelwein, Iowa. A-542

We are in the market for a second hand Electric Spot Welder, capacity two pieces of 1/4" metal. Address X-542, AMERICAN ARTISAN, 139 North Clark Street, Chicago, Illinois.

For Sale—Double Truss Cornice Brake, 8 ft., \$40; 30" Square Shears, \$20; 30" Rollers, \$5; 1/2" Electric Hand Drill, \$25. Address Otto Schuman, 450 Roosevelt Road, Wisconsin Rapids, Wisconsin. Y-542

## TOOLS AND MACHINES

For Sale—Christie vacuum cleaner complete. Has been used only a few times. Price, \$200. Address Frank Sehy, 1206 South Clay Avenue, Jacksonville, Illinois. B-543

## BOOKS

The Revised Edition of the New Metal Worker Pattern Book by Kittridge and Associates is one book that should be in every shop. As a reference book alone it is indispensable. Over 500 9x11-inch pages with 895 illustrations. It covers the principles underlying practically every problem that is likely to come up in daily practice. Beginning with the selection and use of drawing tools, the author explains linear and geometrical drawing so clearly that one who has had no previous knowledge of arithmetic or drawing may understand these essentials and apply them. The most approved methods of pattern cutting are also given in the course of the work. Price, \$6.00, postpaid. Order from the Book Dept., AMERICAN ARTISAN, 139 N. Clark St., Chicago, Ill.

Exhaust and Blow Piping, by Hayes—Exhaust and Blow Piping has had an unusually big demand. A fresh supply is now off the press and is in our hands for immediate delivery. It has an invaluable treatise on the planning, cost, estimation and installation of fan piping in all its branches, giving all necessary guidance in fan work blower and separator construction. 159 pages, 5x8. 51 figures. Cloth. \$2.00. Order from Book Department, AMERICAN ARTISAN, 139 N. Clark St., Chicago, Illinois.

Here are the two books that most sheet metal workers and contractors classify as the most complete books on Sheet Metal Pattern Cutting. The Universal Sheet Metal Pattern Cutter, Vol. 1, deals with every phase of inside work, including Heating, Ventilating, Blower and Exhaust Piping Connections, Marine Sheet Metal Work, Automobile Sheet Metal Work, Machinery and Belt Guards, etc., Mensuration applied to Sheet Metal Work, etc., with many features of construction and Labor-Saving Methods also given in detail.

Vol. 2 deals with every form of Outside and Architectural Sheet Metal Work. A treatise on Drawing, Full Size Detailing and Lettering, Construction of Cornices, Skylights, Molding, Copings, Electrically Illuminated Signs, etc.

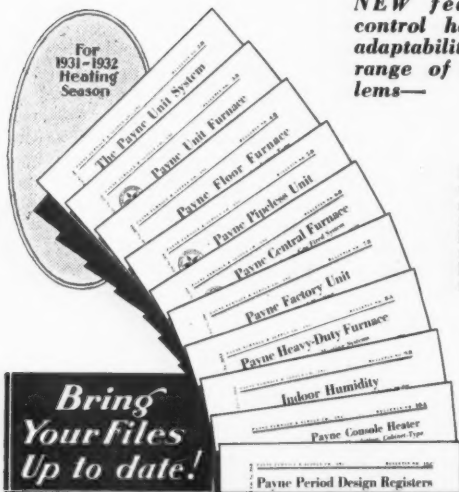
Cloth bound, 400 pages each volume. Price, \$7.50 per volume, postpaid. Order from Book Department, AMERICAN ARTISAN, 139 N. Clark St., Chicago, Ill.

## What Are You Looking For?

Get in the habit of reading these pages as a convenient means of supplying your special wants.

Mention AMERICAN ARTISAN in your reply—Thank you!

# NEW Literature *Now Ready!*



**NEW features, NEW control hook-ups, NEW adaptability to a wider range of heating problems—**

Bulletins contain valuable heating data—with typical heating plans illustrating varied uses of different Payne Furnace types!

**Bring  
Your Files  
Up to date!**

## Gas-fired Warm Air Heating Systems for all Climates . . .

Here is complete coverage of 95 per cent of the entire gas heating field with ONE COMPLETE LINE! Why scatter your efforts on two or more different makes? PAYNE offers types and styles for every heating need. Backed by 16 years sales and installation experience, PAYNE GAS FURNACES are engineered to give highest operating efficiency at lowest possible installation costs.

### Jobbers and Dealers:

Payne Factory and Field Engineers gladly co-operate in helping you to solve difficult heating problems. Sales and advertising plans for 1931-1932 heating season will make PAYNE more than ever a LEADER IN ITS FIELD!

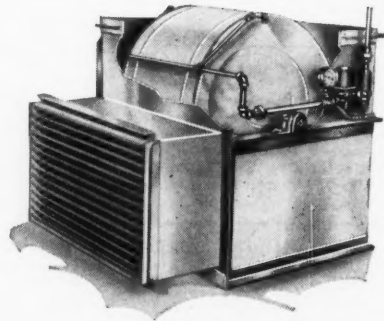


**PAYNE FURNACE  
& SUPPLY CO., INC.**  
Beverly Hills, California

Warehouse—Buffalo, N. Y. • Jobbing Connections in Principal Cities  
Dealers Everywhere

There's a Payne Heat System for Every Climate and Building

## Now for Homes— Single Unit Washer-Blower



—at

## One-Unit Price

**A**GGRESSIVE dealers everywhere are setting up new Fall sales records with the new Am-Pe-Co Air Washer-Blower Combination.

Gives homeowners *both* washed and humidified air at *one-unit* cost. Undersells all types of ordinary double installations. Compact, saves space, only 36 inches high; makes a better job. Can also be operated as a summer cooling system.

Modern, scientific design, *guaranteed ratings*, finest workmanship throughout. Described fully in new illustrated circular just out. Write for a copy and for dealer prices. Be the first in your community to *cash in* on the Am-Pe-Co Washer-Blower.

*Also Am-Pe-Co Blowers for  
forced air systems only*

**American Machine Products Co.**  
Box B, Marshalltown, Iowa

### MAIL TODAY!

Pin this ad to your regular letterhead and mail it to us today for interesting facts about the PAYNE FRANCHISE.

Say you saw it in AMERICAN ARTISAN—Thank you!



Handwritten text, possibly a signature or initials, in dark ink.

All

In  
ma  
Ba

443



r

## rice

are  
n the  
Com-

l hu-  
s all  
Com-  
high:  
ed as

teed  
De-  
just  
rices.  
n on

s Co.

VI

In  
ma  
Ba

12

# VERNIGHT



# DELIVERY...

All modes of transportation are used to guarantee

## "OVERNIGHT DELIVERY"

In addition to the well assorted Barnes Stock which your Jobber maintains for you, the centrally located, automatically equipped Barnes Plant further assures "SAME DAY SHIPMENT".

*Specify Barnes for Quality with Service.*

THE SYMBOL

*Barnes*

OF SERVICE

1125 W. 16th Street

**BARNES METAL PRODUCTS COMPANY**

MANUFACTURERS OF CONDUCTOR PIPE, TUBES, FIVES  
TROUGH AND FITTINGS, ALL SIZES, ALL METALS

Chicago, Illinois

r

# rice

are  
n the  
Com-

hu-  
s all  
Com-  
high;  
ed as

teed  
De-  
just  
ices.  
n on

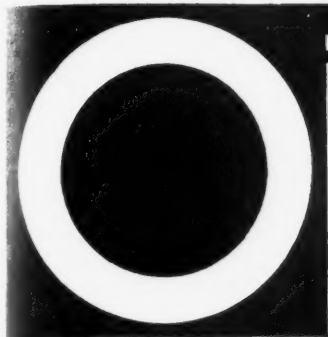
s Co.

Al

In  
ma  
Bar

112





# OVERNIGHT



# DELIVERY...

All modes of transportation are used to guarantee

**"OVERNIGHT DELIVERY"**

In addition to the well assorted Barnes Stock which your Jobber maintains for you, the centrally located, automatically equipped Barnes Plant further assures "SAME DAY SHIPMENT".

*Specify Barnes for Quality with Service.*

THE SYMBOL

*Barnes*

OF SERVICE

4425 W. 16th Street

**BARNES METAL PRODUCTS COMPANY**

MANUFACTURERS OF CONDUCTOR PIPE, ELBOWS, EAVES  
TROUGH AND FITTINGS, ALL SIZES, ALL METALS

Chicago, Illinois



The sheet metal man who knows, says:

**"HERE'S A WAY...."**

to line up profitable inside work for winter"

In stores and office buildings that need re-finishing, *Milcor* Metal Ceilings and Walls solve the problem. Metal is permanent, fire-safe and involves no risk of cracked or fallen plaster. Schools, churches and other buildings offer profitable opportunities.

Hundreds of appropriate designs are available . . . to harmonize with every type of architecture. All are easy to install . . . and pleasing in appearance.

Get busy *now* and go after this class of work. Canvass your territory.



Find out what churches and schools need redecorating. Call on every store and office building that needs a new interior . . . and show them how attractive and economical it is to redecorate the *Milcor* way. Write for free booklet showing hundreds of designs . . . and let us help you figure your cost to get the job at a profit.



## MILCOR PRODUCTS

### MILCOR STEEL COMPANY

MILWAUKEE, WIS., 4117 W. Burnham St. CANTON, OHIO  
Chicago, Ill. Kansas City, Mo. LaCrosse, Wis.

*Sales Offices:* New York, at 100 E. 42nd Street; Boston, Mass., at 136 Federal Street; Atlanta, Ga., at Spring and Luckie Streets; Minneapolis, Minn., at 602-2nd Avenue S.; Little Rock, Ark., at 104 W. Markham Street; Los Angeles, Calif., at 536 N. Pansetta Place, Export Dept., at 100 E. 42nd St., New York City.



*Copper Alloy  
Steel*



**Save with Steel**

